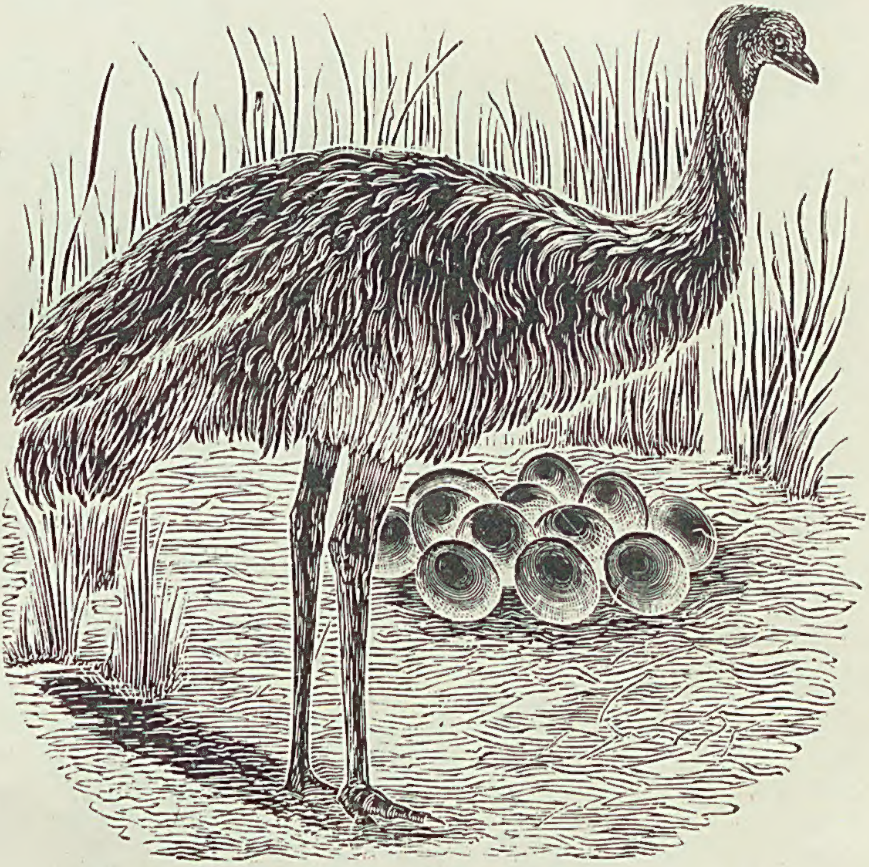
The Emu

A Quarterly Magazine to popularise the Study and Protection of Native Birds and to record Results of Scientific Research in Ornithology.

VOL. XXVI.—1926-27.



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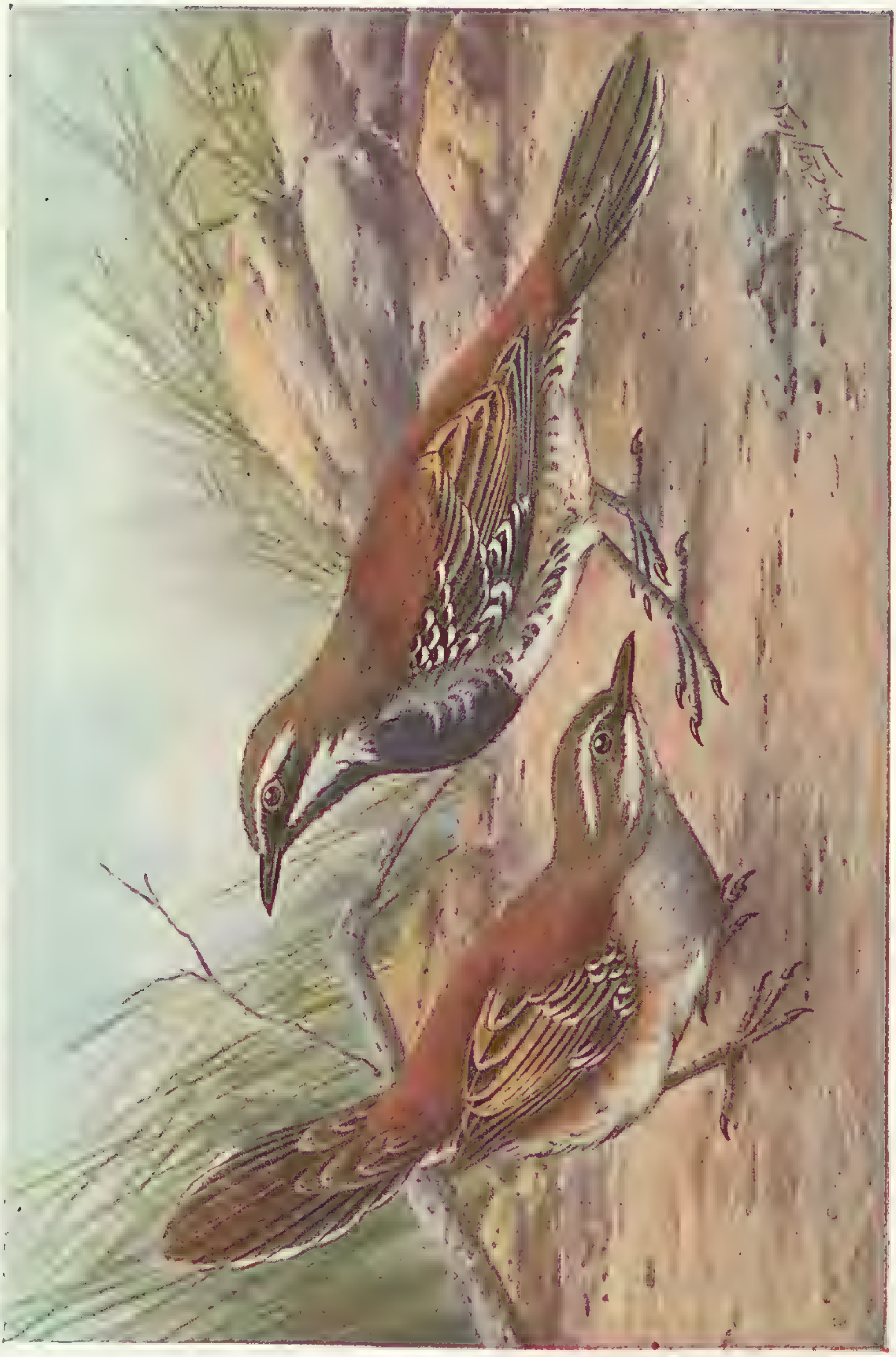
* On the plate itself the number is wrongly given as 34.



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BROWN QUAIL-THRUSH

Cinclosoma castanotum clarum (Morgan).

From a painting by Neville W. Cayley, M.B.O.U.

The Emu

OFFICIAL ORGAN OF THE
ROYAL AUSTRALASIAN ORNITHOLOGISTS' UNION

"Birds of a Feather."

Vol. XXVI.] JULY, 1926. [Part 1.

Birds of the Cardwell District, Queensland.

By H. Greensill Barnard, R.A.O.U., Rockhampton.

With Introduction and Annotations (in brackets) By A. J. Campbell, C.M.B.O.U., &c., Melbourne.

Rockingham Bay district, Northern Queensland, to the ornithologist, is a fascinating field for exploration. Its littoral and mangrove tracts, mountain and lowland, forest and scrub, contain material for endless research.

Mr. (afterwards Dr.) E. P. Ramsay early directed his attention to the locality and he " despatched Mr. E. Spalding, an experienced collector, to Rockingham Bay during October, 1867, with instructions to procure as complete a collection as possible, and particularly to obtain all the information he could respecting the Australian Cassowary." Later, Ramsay wrote : " I regret extremely that although Cassowaries were seen on several occasions, none were obtained. . . . Although the birds were seen they could not be got at otherwise than by lying in wait for them at dusk, which, on account of the hostility of the native blacks, could not be attempted without great risk of life." However, Ramsay made a list (40) of the most interesting species found in the district, including, as "new," the chattering " Chowchilla " (*Orthonyx spaldingi*),* which Ramsay magnanimously dedicated in honour of his collector.

Ramsay himself visited the Rockingham Bay district in 1874, hence his papers " List of Birds met with in North-eastern Queensland, chiefly at Rockingham Bay," which included the discovery of the unique Fly-Robin (*Heteromyias cinereifrons*).† Ramsay also devoted between three and four pages to the Cassowary, and first described its handsome eggs.

Kendall Broadbent was also early in the Rockingham Bay region and discovered, amongst other species, the fine Bridled Honeyeater (*Meliphaga frenata*).** Broadbent completed a valuable and original series of observations on birds of the district which appeared in *The Emu*, Vol. X., pp. 233-245. The notes were made chiefly during a collecting trip from August, 1888, to March following.

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*P.Z.S. (London) 1868, p. 386.

†Ramsay P.Z.S., 1874, p. 603.

**P.Z.S. 1875, p. 588.

It was Dr. Ramsay's glowing account of the rich Rockingham Bay district that induced me to visit the locality in 1885. I camped outside Cardwell or Muenga, on Kennedy Creek, with Messrs. A. & F. Coles (sons of our veteran taxidermist, Mr. Alfred Coles, Melbourne) and Mr. Arthur Gulliver of Townsville. The country was still in its virgin state, and blacks were troublesome about seven miles out.

We visited the romantic Hinchinbrook Island and the Barnard Islands, the latter some miles up the coast. The islet of that group upon which we camped and saw numbers of magnificent Rifle-Birds (*Ptilorhis victoriæ*) has now a lighthouse upon it. I again visited Cardwell in 1916, when I was accompanied by Mr. H. Greensill Barnard, who was collecting on behalf of Mr. H. L. White of "Belltrees," N.S. Wales. Our conjoint list of birds observed and annotations thereon appeared in *The Emu*, Vol. XVII., with 8 plates. However, we left the district before one or two problems were solved to our satisfaction, notably the identification of the Cuckoo's egg found in *Gerygones'* nests, the nidification of the little, dark, red Owl (*Ninox lurida*), more evidence as to the status of two similarly-coloured Honeyeaters (*Meliphaga lewini* and *M. notata*), &c.

Mr. White commissioned Mr. Barnard to return to the district last season, and he was there from the end of September, 1925, to the end of January, 1926. Unfortunately, the district was drought-stricken, notwithstanding its mean average rainfall of about 150 inches, and there was a dearth of birds, to which also no doubt the disastrous cyclone of March, 1918, was greatly contributory. The scrubs apparently had not yet been "re-populated," as it were, so severe was that natural visitation. Mr. Barnard concludes :—"The localities visited by me on this occasion were visited by Mr. A. J. Campbell and myself in 1916, and then we found bird life very plentiful. In the interval between these two trips (9 years) there was a marked change ; many of the birds which in 1916 were plentiful, had almost disappeared, and with the exception of a few species, most kinds were greatly reduced in numbers. Even the residents, who, as a rule, do not notice such things, mentioned to me the absence of many birds, and wished to know the cause. In the great cyclone of 1918 hundreds, probably thousands, of birds were destroyed,* and the same applied to the flying-fox. They were almost wiped out ; now, they are in millions. One could understand such birds as Pigeons, etc., being starved by the foxes eating all the scrub fruits, but it is among the smaller insect-eating birds that the disappearance is most marked. In very many cases, I found while skinning scrub birds a number of ticks adhering to the birds, at the base of the bills. This was the case even in tiny birds, such as *Gerygone*, etc. This may be one of the causes, as scrub ticks are known to kill fowls, dogs, foals and even wallabies in the north."

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*For a description of the cyclone of 1918, and its effect on bird-life, see E. J. Banfield's posthumous book, "Last Leaves from Dunk Island."—EDITOR.

LIST OF BIRDS.

Casuarius casuarius (Cassowary).—A fine specimen was seen on a scrubby creek on Hinchinbrook Island. They were also seen occasionally in the Murray and tableland scrubs. I saw a fine bird in the low brush country with three chicks, about six weeks old, in January. In conversation with the young Messrs. Butler, of "Fringford," Murray River, they told me they found a nest with three eggs near the same spot, a couple of years ago. This nest was in low brush away from the scrub, and a bush fire had burnt close round the nest, but the bird was still sitting on the eggs.

Megapodius reinwardt (Scrub-Fowl).—This bird seems to be holding its own, as it was frequently seen and heard in the scrubs. Owing to the dry season the species was not breeding.

Alectura lathami (Brush-Turkey).—Observed on several occasions, both in the coastal and tableland scrubs, but it was not breeding.

Synoicus australis (Brown Quail).—Seen in a small flock about swampy land.

Turnix maculosa (Red-backed Quail).—Fairly common in forest country, generally in pairs; a nest found in January, 1926, contained three eggs slightly incubated.

Turnix varia (Painted Quail).—Only seen on the tableland; always in pairs.

Ptilinopus regina (Red-crowned Pigeon).—Common on Hinchinbrook Island and on the mainland near Cardwell, but was not seen nor heard on the Murray or the tableland.

Ptilinopus superbus (Purple-crowned Pigeon).—Plentiful about the Murray and on the range and breeding freely towards the end of January.

Megaloprepia magnifica assimilis (Purple-breasted Pigeon).—In 1916 these birds were plentiful about the scrubs, but were rarely seen or heard on this occasion.

Myristicivora spilorrhoa (Nutmeg Pigeon).—These birds were once to be seen in thousands on the northern coast, but, now, alas, they have dwindled till very few remain. Though on the list of protected birds, and their breeding islands have been declared sanctuaries, they are shot in scores by visiting shooting parties, and so the young are left to perish in the nests. Only small flocks were seen about the Murray and their loud "coo" was seldom heard.

Lopholaimus antarcticus (Topknot Pigeon).—A few small flocks seen on the top of the range.

Columba norfolciensis (White-headed Pigeon).—On rare occasions observed feeding on scrub fruits.

Macropygia phasianella (Pheasant-Pigeon).—These birds were not nearly so plentiful as on my former visit to this locality in 1916; were noted both at Cardwell and on the Murray.

Geopelia placida (Peaceful Dove).—Frequently found in the forest country.

Geopelia humeralis (Bar-shouldered Dove).—Common in all localities; their nests were frequently seen in the open tea-tree country and in orange trees about the settlers' homesteads.

Chalcophaps chrysochlora (Green-winged Pigeon).—Common in all scrubs, and frequently seen feeding on the ground; this is one of the birds which seem to be holding their own.

Hypotaenidia phillipinensis (Banded Landrail).—Seen about the running creeks on Kirrima in long, reedy grass.

Rallina tricolor (Red-necked Rail).—Heard calling in the scrubs at night, during December.

Amaurornis ruficrissus (Bush-Hen).—Soon after the first rain in November these birds were heard calling both day and night, in the long grass, and were seen along water-courses; but when heavy rain fell further north they disappeared. On one occasion, while I was walking through a dense patch of lawyer scrub, one bird flew from about ten feet above my head. It had evidently been roosting during the day.

Porphyrio melanonotus (Eastern Swamp-Hen).—A few birds seen along the creeks on Kirrima Station.

Burhinus magnirostris (Southern Stone-Curlew).—Seen in pairs in the forest country; their wailing cry was often heard at night.

Owing to the severe drought, most of the swamps and waterholes were dry, and water fowl were scarce and only odd birds of the following species were observed :—

Megalornis rubicunda (Brolga).
Threskiornis molucca (White Ibis).
Threskiornis spinicollis (Straw-necked Ibis).
Platalea flavipes (Yellow-billed Spoonbill).
Notophoÿx pacifica (White-necked Heron).
Notophoÿx novæ hollandiæ (White-fronted Heron).
Nycticorax caledonicus (Nankeen Night-Heron).
Phalacrocorax carbo (Black Cormorant).
Phalacrocorax ater (Little Black Cormorant).
Phalacrocorax varius (Pied Cormorant).
Phalacrocorax melanoleucus (Little Pied Cormorant).
Anas superciliosa (Grey Duck).
Querquedula gibberifrons (Grey Teal).

[Regarding the Chestnut-breasted Teal, Mr. Barnard confirms Dr. Ramsay's record of 1874. This is probably the northern limit on the eastern coast of Australia for this Teal. Another link with the past: Mr. Barnard was staying, for a while, with Mr and Mrs. Tom Butler, "Fringford," Upper Murray district. Mrs. Butler is a daughter of "Mr. Miller, a settler on the Herbert River," who was instrumental in procuring for Dr. Ramsay his first specimens of Cassowary eggs.—A.J.C.]

Astur novæ-hollandiæ (Grey Goshawk).—Seen at odd times about the Murray; one bird observed on top of the Kirrima Range.

Astur fasciatus (Australian Goshawk).—Fairly common both on coast and tableland.

Accipiter cirrocephalus (Collared Sparrow-Hawk).—Observed on several occasions. While driving in a motor truck we disturbed several Black-faced Cuckoo-Shrikes from beside the road, and as they flew off one of these Hawks made a swoop and struck a cloud of feathers from a Cuckoo-Shrike.

Uroaëtus audax (Wedge-tailed Eagle).—Seen on several occasions soaring above the hills on the Upper Murray. A pair was disturbed from the ground, where the birds had a freshly-killed wallaby.

Hieraaëtus morphnoides (Little Eagle).—Noted on several occasions, soaring high above the trees about the Murray River flats.

Haliaeëtus leucogaster (White-breasted Sea-Eagle).—Seen about the coast of Cardwell. A solitary bird observed at a waterhole near Kirrima Station, on the tableland, where it was feeding on a dead eel.

Haliastur indus (Red-backed Sea-Eagle).—Observed about the mangrove creeks on Hinchinbrook Island; also on the lower Murray River.

Haliastur sphenurus (Whistling Eagle).—Seen about the coast of Cardwell, also at the Murray River and on the tableland.

Lophoïctinia isura (Square-tailed Kite).—Odd birds observed hawking about the tree-tops near the Murray River.

Baza subcristata (Crested Hawk).—A few pairs observed in the bloodwood forests near the Murray River.

Falco longipennis (Little Falcon).—A single bird seen perched on the top of a tall gum on the upper Murray.

Falco hypoleucus (Grey Falcon).—A pair of these fine birds had a nest with young near my camp on the range, at the head of the Murray River.

Falco berigora (Brown Hawk).—A few birds observed hawking near a bush fire.

Pandion haliaëtus (White-headed Osprey).—A pair had a nest at the top of a large dead tree on Hinchinbrook Island; was also seen along the coast on the mainland.

Ninox lurida (Red Boobook Owl).—This little Owl, fairly common about the Murray River was also observed on the range, where Mr. A. J. Campbell and I obtained a pair in 1916. As the birds were always observed in pairs, I was evidently too late for eggs. I obtained a female from a dense patch of lawyer scrub, near my camp. The male was also present, and night after night he left the scrub

UPPER MURRAY RIVER COUNTRY, QUEENSLAND.

Photo. by A. J. Campbell.

[illegible]

and came into the forest country where for hours he called loudly " Mo-pok," searching for his mate.

Ninox connivens (Winking Owl).—While camped on top of the range, I observed a large Owl fly from the scrub just at dark and disappear in the forest country, but could not get near enough to identify it. Afterwards, at Kirrima Station, ten miles further on, I flushed a pair of large Owls from a patch of scrub on Blenco Creek, and succeeded in securing the female. Evidently the bird seen on top of the range was the same species. This bird utters a quick " woo-hoo." A mass of worms, each about 4 inches in length, was coiled on the skull about the right eye, and under the skin ; the area was greatly inflamed.

Ninox rufa (Rufous Owl).—A pair of these fine birds was observed in a tea-tree swamp near Cardwell. A large *Melaleuca* tree with a hollow close by appeared a likely nesting-site. On walking towards the tree a young Owl was found on the ground. It was covered with long, white down, with the wing feathers just sprouting beneath the down. On being picked up, it at once showed fight and dug its claws and beak into my hand, at the same time uttering a whistling note. Both the parent birds immediately flew at me, coming so close I could almost touch them with my hand; at the same time they uttered a low "coo." As the young bird was too immature to convert into a specimen, I placed it on a low bush. On passing the spot next day the parents were still in their roosting tree but the young bird was gone. On looking round for it, a so-called " goanna," ran out of a large bunch of grass, and searching round I found the young Owl partly eaten. Probably there were other young birds in the nesting hollow.

Trichoglossus moluccanus (Rainbow (Blue Mountain) Lorikeet).—Large flocks were feeding on the flowering gums along the Murray, and also on the tableland. They were breeding freely in December in hollow spouts of the tall gums on top of the range.

Trichoglossus chlorolepidotus (Scaly-breasted Lorikeet).—Common, and breeding with the Rainbow Lorikeets on the top of the range.

Glossopsitta pusilla (Little Lorikeet).—Seen about Kirrima Station, but were not common.

Calyptorhynchus banksi (Red-tailed Black Cockatoo).—Seen in small flocks along the Murray River, where they were feeding on the seeds of scrub-trees.

Kakatoë galerita (White Cockatoo).—Common. Were nesting in hollow spouts in the large gum trees on the coast and on top of the range.

Aprosmictus scapularis (King-Parrot).—These birds were plentiful about the Murray scrubs and on the range in 1916, but were seen on two occasions only on this trip ; one being on the Murray and the other on the range.

Platycercus adscitus (Pale-headed Rosella).—A single pair seen on the way to Kirrima Station.

Podargus strigoides (Tawny Frogmouth).—Found in the open forest, both at Cardwell and the Murray. One nest found contained three eggs, another three young. A bird from the first nest proved to be a male. On several occasions when hunting through the forest country I heard the call of this bird, and traced it to the tree in which the bird was roosting. In one instance I was within 15ft. of the bird, and it still continued to call " oom-oom-oom," in quick succession. I watched it for some time and counted the notes, which were repeated from 15 to 25 times. Though familiar with this bird from boyhood, I have never heard it call " more-pork." When skinning the bird and removing the eyes I found a mass of string-like worms from three to four inches in length adhering to the back of the right eye, which was much inflamed. On removing and counting these worms, I found there were no fewer than nine of them. Surely this must affect the sight of the eye very much, even if no further damage were done to the bird's health.

Podargus papuensis (Papuan Frogmouth).—A pair of these fine birds had a nest in a Leichhardt tree growing on the banks of the Murray River. The nest contained a single egg, slightly incubated. Both birds were secured. Usually the male birds are found on the nests, at least during the day-time. In this instance the sitting bird was the female. Another pair flushed from a small tree in the scrub (when they were roosting) flew a short distance and alighted in separate trees. The male bird commenced to call, with the head well up and mouth open. He uttered a long-drawn, mournful " more-pork "—the note rising on the first syllable and lowering on the second. I heard this same call coming from the scrubs at night. The note is much longer and more mournfully drawn-out than that of the Boobook Owl, and very easily distinguished from the latter.

[We did not observe *P. papuensis* on the 1916 trip. Of the pair above mentioned the female is much the browner bird, with wing, in the flesh, 15 inches, that of the male an inch more. Touching *P. strigoides*, previously we regarded it as *P. phalænoides*, but after the examination of a wide range of material we are of opinion that the Cardwell bird more answers the key to *P. strigoides*.—A.J.C.]

Eurystomus orientalis (Dollar-Bird).—First seen on the Murray River in October, where they remained to breed. Fairly common.

Alcyone azurea (Azure Kingfisher).—Seen along the fresh-water streams and found nesting in the bank of a fresh-water creek on Hinchinbrook Island.

Alcyone pusilla (Little Kingfisher).—Seen along fresh-water creeks on Hinchinbrook, also in the tea-tree swamps near Cardwell.

Dacelo gigas (Laughing Kookaburra).—Common on the coast and tableland; breeding in November and December.

Dacelo leachii (Blue-winged Kookaburra).—Observed in the forest country, where they were breeding in hollow spouts of the gum-trees.

Halcyon macleayi (Forest Kingfisher).—Common in forest country, where they were breeding in the termites' nests in trees.

Halcyon sanctus (Sacred Kingfisher).—Common along all the coastal belt; were breeding in termites' nests in trees.

Halcyon chloris (Mangrove Kingfisher).—Odd birds observed about the mangroves on Hinchinbrook Island and on the mainland.

Tanysiptera sylvia (White-tailed Kingfisher).—First observed in the scrubs of the Murray River on Nov. 17th, and had evidently just arrived from the north. Was breeding in January, 1926.

Merops ornatus (Rainbow-Bird).—Plentiful; breeding on the sand-ridges.

Eurostopus guttatus (Spotted Night-jar).—Flushed on several occasions from stony ground. Also heard calling at night on Hinchinbrook Island.

Caprimulgus macrurus (Large-tailed Night-jar).—Flushed from swampy ground. A pair of eggs found were heavily incubated. It was also heard calling at night on Hinchinbrook Island and on the tableland.

Collocalia francica (Grey Swiftlet).—On my arrival at Cardwell in September these little Swifts were frequently seen, hawking over the trees and about the ranges.

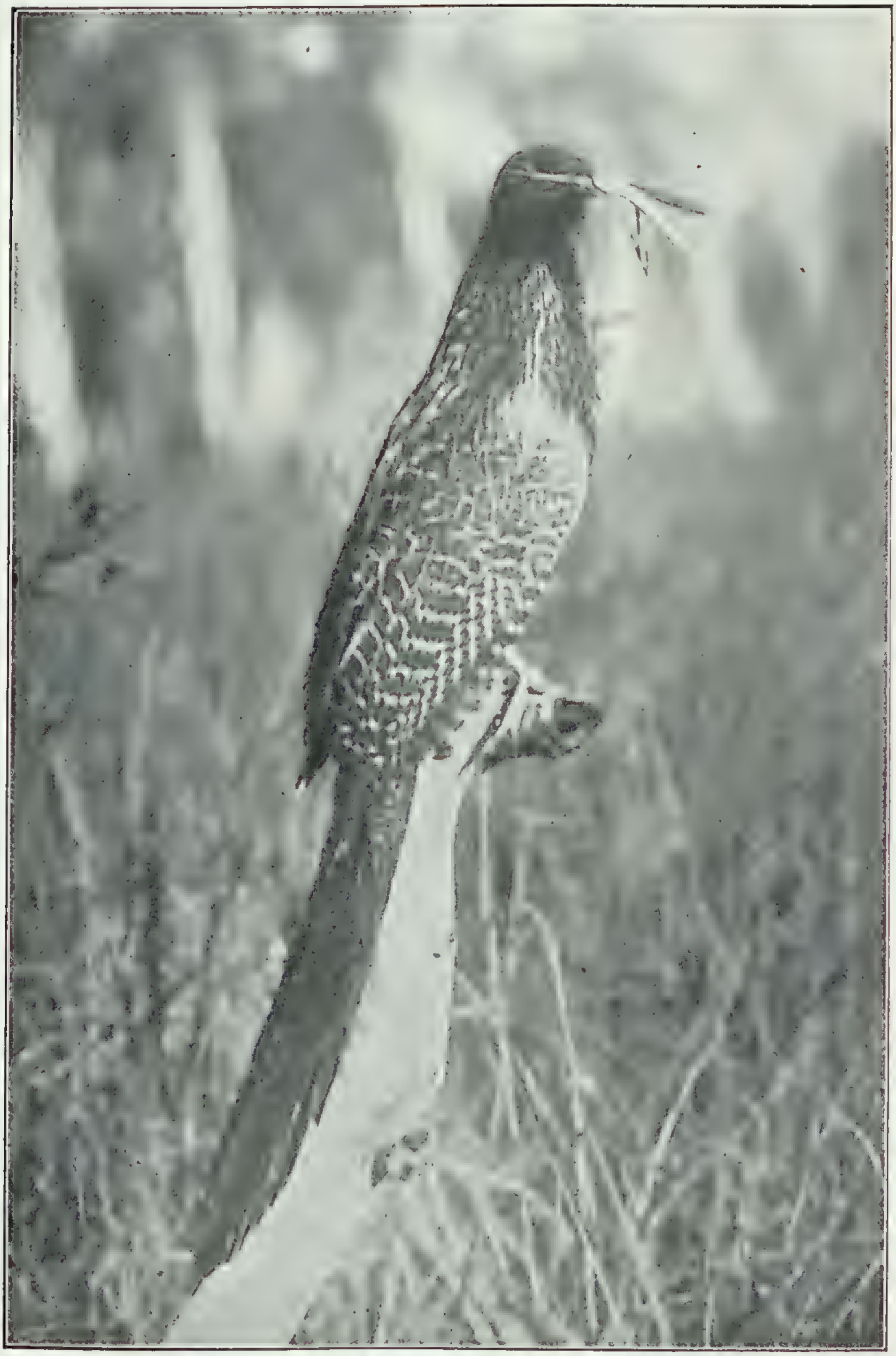
Hirundapus caudacutus (Spine-tailed Swift).—First observed 20/10/25 hawking over the tree tops, after a thunderstorm; were observed in great numbers in January.

Cuculus optatus (Oriental Cuckoo).—This fine Cuckoo was first observed early in November. It appears to breed in Queensland, as one bird seen at the Murray River was in immature plumage.

Cacomantus pyrrhophamus (Square-tailed Cuckoo).—These birds were fairly common and were frequently calling.

Lamprococcyx russatus (Rufous-breasted Bronze-Cuckoo).—This was the only Bronze Cuckoo seen in the district. I obtained a specimen of a male bird on Hinchinbrook Island early in October, and shortly afterwards, while hunting through a tea-tree swamp, I saw one of these birds clinging to the nest of *Gerygone magnirostris*. I was close quite to the bird at the time and could not mistake its identity. I waited till it flew off, then examined the nest and found two eggs of the *Gerygone* and a freshly laid egg of the Cuckoo. While I was examining the nest, the Cuckoo remained on a dead stick a short distance away. On my approach it flew off and I followed, eventually getting a shot. The bird fell among a mass of tall ferns and young tea-tree, and though I searched for nearly an hour I could not find it. Later, on the Murray, I obtained (together with the foster-parents), a young Cuckoo of this species, which was being fed by a pair of *Gerygone flavida*, and later found a nest of *G. flavida* containing one egg, which was left to obtain a full set. On visiting the nest two days later, I found it torn open and the broken shell of a bronze egg in the lining. This being the only Bronze Cuckoo seen in the locality, it is evident that the first egg taken from the nest, to which the bird was seen clinging, belongs to this species.

[In answer to a question, Mr. Barnard replied :—" The bird (*L. russatus*) when seen at the *Gerygone's* nest was clinging to the material with the head at the



PHEASANT-COUCAL WITH GRASSHOPPER FOR YOUNG.

Photo. by W. G. and R. C. Harvey.

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entrance, but not inside, the bird's tail pointing to the ground; therefore it was impossible for the Cuckoo to have been leaving the nest (*i.e.*, laying in it). The assumption is therefore that the egg was *placed* in the nest and not *laid* in it; also, from the size of the bird the nest would be considerably disturbed, if the bird had entered to lay. The nest in question was not disarranged in any way." This is very direct and important information concerning the question—How does the Cuckoo deposit its egg in the foster-bird's nest? Some observers, both here and in the old world, aver that Cuckoos lay directly into the fosterer's nest, but with a *Gerygone's* nest this is a physical impossibility. Moreover, Cuckoos have been seen carrying in the bill, eggs of would-be fosterers. If so, Cuckoos are also likely to carry their own.—A.J.C.]

Eudynamis orientalis (Koel).—First heard calling in the scrubs on 14/10/25. They soon became plentiful. A close watch was kept on Orioles' nests for this Cuckoo's eggs, but I did not find any.

Scythrops novæ-hollandiæ (Channel-billed Cuckoo).—These birds arrived in the district in great numbers in November, feeding on wild figs. I counted as many as 60 in a flock, flying from the feeding grounds in the evening towards the ranges, where they evidently go to roost. They breed early on the tableland in Magpies' and Butcher-Birds' (*Cracticus nigrogularis*) nests.

Centropus phasianinus (Pheasant-Coucal).—Common throughout the district. In spite of its being practically a ground bird, the Coucal seems to be holding its own in most districts I have visited. One nest I found in the long blady grass contained 7 eggs and another one 4; and yet another contained 3 young.

Pitta versicolor (Noisy Pitta).— During the week I camped on Hinchinbrook Island, early in October, I observed this bird on several occasions and heard its call on the 17th October. I left Cardwell for the Murray and though I practically lived in the scrubs there, I neither saw nor heard anything of these birds till towards the end of November; from then on they became plentiful. Does this bird arrive from the north? It would seem so, as its arrival coincided with that of the White-tailed Kingfisher, which bird certainly does arrive from the north.

Hirundo neoxena (Welcome Swallow).—Seen on one occasion at the Blenco Creek falls, near the great Herbert River gorge; they were flying about the cliffs, many of them going behind the falling water, where they were evidently nesting.

Hylochelidon ariel (Fairy Martin).—Seen about the Murray flats, where they were hawking over the grasstops after rain. Old nests were noted in culverts along the railway.

Rhipidura flabellifera (Grey Fantail).—Observed on several occasions in the scrubs of the ranges.

Rhipidura rufifrons (Rufous Fantail).—Was often seen in the scrubs when I first arrived in the district, but later disappeared, probably going further south to breed.

Rhipidura setosa (Northern Fantail).—A fairly common bird; several of its small cup-shaped nests with the long tails were found, but the nests were all destroyed before the full set of eggs was laid.

Rhipidura leucophrys (Black-and-White Fantail).—A few of these well-known birds were observed about lagoons in company with Magpie-Larks (*Grallina*).

Myiagra rubecula (Leaden Flycatcher).—Seen in forest country, where they were nesting.

Arses kaupi (Pied Flycatcher).—These lively little birds were often seen in forest country as well as in scrubs. Their tree-creeper-like movements are very noticeable as they work the tree-trunks in search of insects. They were generally seen in pairs.

Piezorhynchus alecto (Shining Flycatcher).—Inhabits the mangroves; is also found along the scrubby parts of fresh-water rivers and creeks some miles inland, where it was found breeding. Several nests were found built on branches overhanging water, but were mostly destroyed before the sets were completed. One nest contained three eggs.

Monarcha melanopsis (Black-faced Flycatcher).—Odd birds seen, generally well up in the trees.

Monarcha trivirgata (Spectacled Flycatcher).—A common bird in the scrubs, where its pretty, moss-covered nests were often observed, but every nest found was destroyed before the full complement of eggs was laid.

Microeca fascinans (Brown Flycatcher).—Seen in forest country on the tablelands.

Microeca flavigaster (Lemon-breasted Flycatcher).—Inhabits the coastal forest lands, where it builds its tiny nest for its single egg.

Quoyornis leucurus (Mangrove Robin).—This little bird confines itself to the mangroves along the coast and salt-water creeks, building its pretty, cup-shaped nest in the fork of a small mangrove. Its loud, clear whistle is often heard.

Heteromyias cinereifrons (Grey-headed Robin).—Found in the ranges, where it builds along the creeks, the nests often being placed on lawyer vines, on small palms, or in the forks of small bushes, sometimes within three feet of the ground. A nest found in December contained two eggs. One is the usual number.

Eopsaltria chrysorrhoa (Northern Yellow Robin).—Found in the forest country, both on the coast and tableland, Young birds were seen on several occasions.

Eopsaltria capito nana (Pale-yellow Robin).—This little bird confines itself to the scrubs, where it places its nest on the leaves of lawyer vines or on a hanging vine.

Pachycephala pectoralis (Golden Whistler).—Frequents the scrubs of the high ranges; found breeding in December.

Pachycephala rufiventris (Rufous Whistler).—A common bird in the forest country, both of the coast and tableland.

Pachycephala griseiceps (Grey Whistler).—Often met with in open scrubs and along scrubby creeks. It associates with smaller birds when feeding. Its note somewhat resembles that of *pectoralis.*

Colluricincla harmonica (Grey Thrush).—Common in the forest country, where it is often seen on the ground.

Colluricincla megarhyncha (Rufous Thrush).—Common in the scrubs, both of the coast and ranges. It is responsible for the destruction of many of the smaller birds' nests, as on three occasions I saw one tearing nests to pieces to get the young they contained.

Colluricincla boweri (Bower Thrush).—This bird, a lover of the high range scrubs, was not often observed.

Grallina cyanoleuca (Magpie-Lark).—Common about the swamps and water-holes. Breeding.

Oreoica gutturalis (Crested Bell-Bird).—Seen in the ironbark forest country near Kirrima Station, and their bell-like note often heard.

Psophodes olivaceus (Eastern Whip-Bird).—When in company with Mr. A. J. Campbell I visited the Murray river in 1916, we found the Whip-Bird plentiful in all the coastal scrubs. On this occasion I neither saw nor heard the bird below the ranges, and only very few there.

Coracina novæ-hollandiæ (Black-faced Cuckoo-Shrike).—Fairly common; a number of immature birds of this species appeared in the district in October. They were evidently last season's birds and appeared to come from the north. A nest was in course of construction near my camp on the range.

Coracina hypoleuca (White-bellied Cuckoo-Shrike).—Common in the district, but not seen breeding.

Coracina lineata (Barred Cuckoo-Shrike).—Seen about the ranges, generally in high timber.

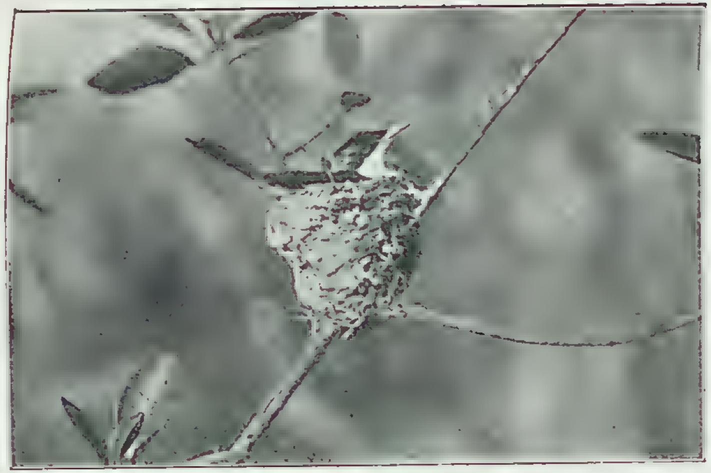
Edoliisoma tenuirostre (Jardine Caterpillar-eater).—Fairly common in the district; generally observed in pairs.

Lalage tricolor (White-winged Caterpillar-eater).—Odd birds of this species appeared in November but did not remain.

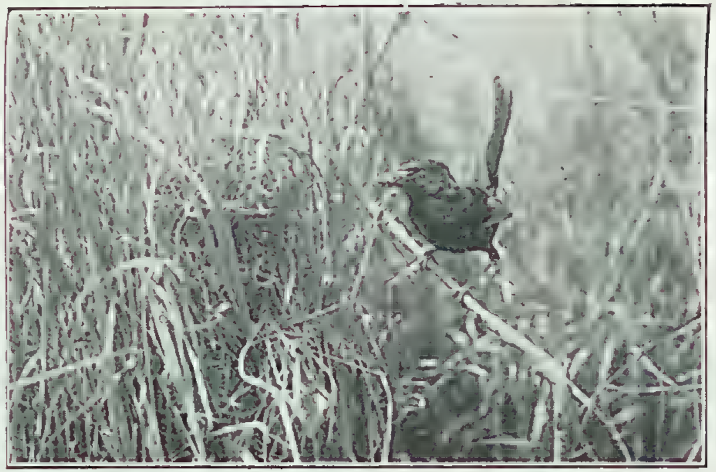
Lalage leucomela (Varied Caterpillar-eater).—A pair were building a small nest on the flat fork of a projecting limb on Hinchinbrook Island, and birds were fairly common in scrubby country.

Sphecotheres flaviventris (Yellow Fig-Bird).—Common in the district. Very fond of nesting in the orange and mango trees about the settlers' homesteads. On hearing a bird calling at night I took my torch and examined the tree to find what the disturbance was, and found the female bird trying to fight off a green tree-snake, which was trying to get the young birds in the nest. A charge of shot from the little gun soon finished the snake.

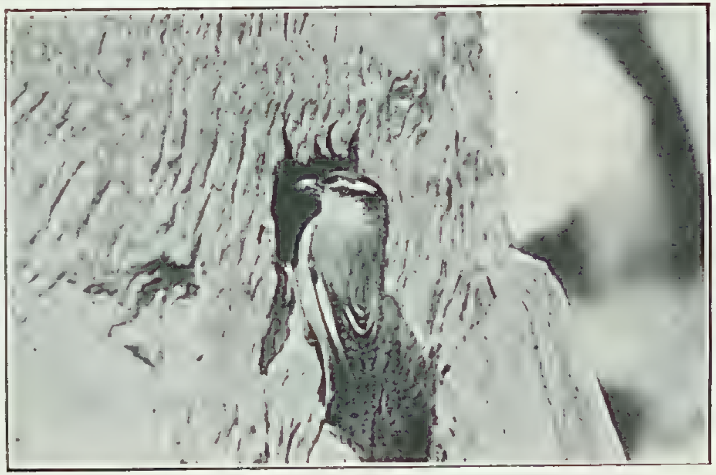
Orthonyx spaldingi (Northern Logrunner).—A few seen on top of the ranges. In 1916 these birds were often seen in this locality but they seem to have become very scarce.



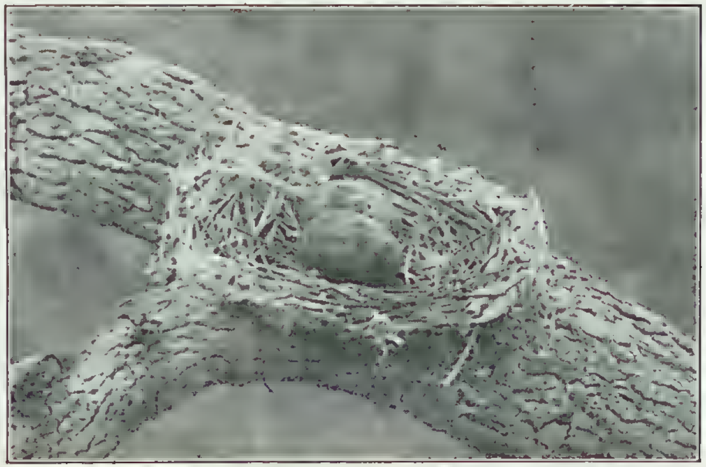
SHINING FLYCATCHER (FEMALE) BROODING.



RED-BACKED WREN (MALE) WITH FOOD FOR YOUNG.



BLACK-HEADED PARDALOTE AT NEST-HOLLOW IN FENCE-POST.
Photo. of Pardalote by D. W. Gaukrodger; others by W. G. and R. C. Harvey.



NEST AND EGGS OF LITTLE CUCKOO-SHRIKE.

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Gerygone olivacea (White-throated Warbler).—A single pair of these birds was found nesting in a patch of forest country on top of the range.

Gerygone flavida (Fairy Warbler).—Met with on Hinchinbrook Island, at Cardwell and on the Murray. This little bird prefers to build about water, the nest in most instances being placed beside a hornets' nest, though the hornets are sometimes absent. Though not common, the birds are to be met with generally in pairs a few miles apart, and seem to remain in one locality, evidently breeding about the same spot, year after year, as there were generally one or two old nests near the new one. The Bronze Cuckoo (*L. russatus*) is very partial to these birds as foster-parents.

[Mr. Barnard and I were under the impression that on our 1916 trip, having secured breeding birds, their nest and eggs, besides seeing numerous mated pairs in the bush, we had established the fact that *G. flavida* was separated specifically from the black-throated and black-lored species (*G. personata*), from Cape York. (*Emu*, Vol. XVII., p. 21). Upon our testimony *G. flavida* was placed on the Check-list as a separate species, and was on the draft list presented by the convenor of the committee at the Rockhampton Congress of the R.A.O.U., 1924. Was it not somewhat late to claim a re-discovery of *G. flavida* at a camp-out of that Congress, as the title of Mr. A. H. Chisholm's fine article with exquisite coloured plate purports ? (*Emu*, Vol. XXIV., p. 161). Mr. Chisholm did well in extending the habitat so far south and in procuring specimens in proof thereof and comparing them with the types in the Australian Museum.—A.J.C.]

Gerygone magnirostris (Large-billed Warbler).—Very common, their long drift-like nests being found in a variety of places in tea-tree swamps and over water in creeks and rivers. They are foster-parents of the Bronze Cuckoo, *Lamprococcyx russatus*.

Gerygone mouki (Northern Warbler).—Found in the scrubs of the ranges, where it was often met with, generally in pairs, but at times three or four were seen together. As a rule they were seen feeding in the trees, about thirty feet from the ground. The species has a faint twittering song, not unlike that of *G. flavida*.

Sericornis lævigaster (Buff-breasted Scrub-Wren).—This bird was only seen about the patches of scrub and along the tea tree creeks on the tableland near Kirrima station, where it was fairly numerous.

Sericornis lathami (Yellow-throated Scrub-Wren).—Found in the dense scrubs of the Kirrima range and generally met with in flocks of from four to six. Builds its bulky nests in lawyer vines, often from twenty to thirty feet from the ground. Several nests were noticed in course of construction but were destroyed before being completed. Aswith the *Gerygones*, the female alone builds the nest.

Sericornis magnirostris (Large-billed Scrub-Wren).—Common in the scrubs of the Murray and also seen on the ranges. Several of the bulky nests were found, placed in lawyer vines, but they were destroyed before being completed.

Oreoscopus gutturalis (Fern-Wren).—Found among the ferns and undergrowth, generally in pairs. They did not appear to be breeding. It is probable many of the little scrub birds breed after the wet season and before the winter. Found at a height of about 2,500 feet

Acrocephalus australis (Reed-Warbler).—Early in October a single specimen was seen in long reedy grass on Hinchinbrook Island. It was fairly common at the end of December in the reedy grass growing along the running creeks of the tableland.

Cisticola exilis (Grass-Warbler).—Appeared in numbers on the open flats about the Murray, especially in old cultivation paddocks, where it was nesting freely in January.

Malurus amabilis (Lovely Wren).— Several flocks of this lovely little bird were observed about Cardwell; they were often about the fringe of the mangroves. One nest seen contained three eggs and was placed in a large tuft of coarse grass with sawlike edges to the leaves. On a former trip to the Murray River this little bird was often met with, but was not seen in that locality on this occasion.

Malurus melanocephalus (Red-backed Wren).—Frequently met with in the forest country. Their nests were often found in the blady grass patches and several were placed in the twigs of low dead bushes, unsheltered, above the top of the grass.

Artamus leucorhynchus (White-breasted Wood-Swallow.—Found, generally, about waterholes, but a pair were seen on the top of the Kirrima Range, where they had a nest in the hollow spout of a tall gum tree growing on the edge of the scrub.

Artamus cyanopterus (Dusky Wood-Swallow).—Seen in company of Tree-Creepers in the forest country near Kirrima Station.

Artamus minor (Little Wood-Swallow).—Observed in forest country, generally perched on the tops of black stumps.

Neositta striata (Striated Sittella).—Seen in small flocks searching the tree-stems for insects. Noticed both on the coast and tableland.

Climacteris leucophaea minor (White-throated Tree-Creeper).—Inhabits the scrubs of the tableland, and occasionally observed in the forest adjacent the scrub.

Climacteris melanota (Black Tree-Creeper).—Found in the ironbark and bloodwood forest country ten miles from the top of the range, and near Kirrima station. Evidently breeds early, as fully-grown immature birds were seen.

[As some previous collectors have recorded this species as *C. scandens* (=*picumna*) more material was collected; this proved our former contention that the species is referable to *melanota*, although not precisely typical. General upper surface of typical birds is fuscous black, that of the Kirrima tableland bird being fuscous and differing from *picumna*, which is hair-brown. Tail shows obscure black band, which is lost in the all-black tail of *melanota*. Again, the under-surface of the Kirrima bird is slightly lighter than typical, being hair-brown, but not so light as *picumna*, which is drab underneath. Mr. G. M. Mathews has recorded a bird from Cairns as *C. melanota barroni* (A.A.R., Vol. II., p. 131).—A.J.C.]

Dicaeum hirundinaceum (Mistletoe-Bird).—Common in all localities.

Pardalotus punctatus (Spotted Pardalote).—Only seen in the tall gum and bloodwood forests on top of the range.

Pardalotus melanocephalus (Black-headed Pardalote).—Seen in forest country, searching for insects in the tree-tops. They are early breeders and had finished their domestic duties when I arrived in the district in September.

Cyrtostomus frenatus (Sun-Bird).—These little gems of the northern parts were often seen, hovering about flowers. Their pretty nests were seen along tea-tree creeks, etc.

Zosterops lateralis (Grey-breasted Silvereye).—Common on Hinchinbrook Island and also on the mainland. During my absence on the tableland a pair built in an orange tree close to a settler's house; the nest contained two young on my return.

Melithreptus lunatus (White-naped Honeyeater).—Only seen in the forest country along the top of the ranges.

Melithreptus albogularis (White-throated Honeyeater).—Generally seen feeding in small flocks in eucalyptus country; not seen on the tableland.

[As pointed out with the two Honeyeaters, *Meliphaga lewini* and *M. analoga* (=*notata*), which Mr. G. M. Mathews has separated generically, it is strange that he is slow to admit even specific differences between *Melithreptus lunatus* and *M. albogularis*. One would think Mr. Mathews is apparently more concerned in their sub-specific divisions (having named nine) than he is in the specific difference.* Ornithologists were never surer of their ground than in separating *M. lunatus* of the south, from *M. albogularis* of the north, and it is interesting to find both species in the rich region of Rockingham Bay, thanks to the convincing material now in the "H. L. White Collection," National Museum, Melbourne. —A.J.C.]

Myzomela sanguinolenta (Scarlet Honeyeater).—Met with in all localities, feeding on the honey of flowering trees.

Myzomela pectoralis (Banded Honeyeater).—A single specimen seen and obtained at Kirrima Station on the tableland.

Myzomela obscura (Dusky Honeyeater).—Common about flowering shrubs and trees.

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*Mathews: *Birds of Australia*, Vol. XI., p. 254.

Gliciphila modesta (Brown-backed Honeyeater).—Very common; their covered, paper-bark nests were frequently observed, generally over water or in tea-tree swamps.

Gliciphila indistincta (Least Honeyeater).—Seen about flowering tea-trees.

Meliphaga lewini (Yellow-eared Honeyeater).—Common on the top of the ranges, but not seen or heard on the coastal fall.

Meliphaga analoga (Yellow-spotted Honeyeater).—For a considerable time there has been confusion over these yellow-eared Honeyeaters. In 1896, while collecting on Cape York for a Melbourne syndicate, I was asked to clear up a point then in discussion over this bird and the graceful or Lesser Yellow-spotted Honeyeater, *M. gracilis.* I was fortunate in securing the nests and eggs of both these birds, together with skins obtained at the nests, proving conclusively that they were different birds. In 1916, when in company with Mr. A. J. Campbell I visited the Cardwell and Kirrima districts, we obtained skins of what we took to be *M. notata* from the coast and *M. lewini* from the range. Neither Mr. Campbell nor Mr. H. L. White, who compared the skins, could separate them. As the notes of the two birds are totally different, I held to my contention that there was a difference in these two Honeyeaters. A considerable amount of correspondence passed between us on the subject, but the matter remained in abeyance. In September of 1925 Mr. H. L. White wrote asking if I would undertake a collecting trip for him, and I answered in the affirmative and suggested the Cardwell district, as, judging from my experience there in 1916, I was of the opinion there was still good work to be done in those parts. To this Mr. White agreed, but unfortunately the season proved to be one of the worst on record in the North, consequently the results of the trip were much restricted. However, I was able to study closely the question of these two Honeyeaters. I obtained skins of the coast bird, then shifted my camp to the top of the range. On the way I noticed particularly the notes of these birds.* On reaching the foothills the notes of the coast bird ceased and there was a complete absence of the note of either bird till I had reached a height of over 2,000 ft. (I may here state that at this part the range is over 3,000 ft. in height). I then heard the familiar note of *M. lewini* for the first time, and as I ascended it became more frequent. Crossing the range and descending through dense scrub for 500 ft., I pitched my camp on the edge of the scrub, in forest country. Here I spent ten days studying the birds and obtaining specimens. On returning to the Murray, I compared the skins of birds obtained on the range with those from the coast and found there was a good deal of difference in the measurements. The measurements of highland females compared closely with those of the males from the lowlands, while the highland male was considerably larger and the bill was larger and more curved, also the yellow spot on the ear was larger in the mountain birds. The conclusions formed from my observations are, that the mountain bird is *M. lewini* and the lowland bird *M. notata*, of Gould. Probably this is the northern limit of *M. lewini* and the southern limit of *M. notata*. To one unversed in the notes and habits of these three Honeyeaters, *M. lewini, M. notata and M. gracilis*, it would be very easy to confuse the birds.

[Mr. Barnard has done excellent work and amply proved his contention with the "truth," *i.e.* the material. In our trip of 1916 we collected *one* skin only of the lowland bird—not sufficient to base a sound decision on. In the meantime, Mr. Barnard has, inadvertently no doubt, overlooked a little history. In 1919 Mr. H. L. White despatched Mr. W. McLennan to the Torres Strait Islands, where he obtained specimens of two males and one female which were diagnosed as *Ptilotis notata* and one was figured (coloured) in *The Emu*†. Therefore, we are exceedingly glad of Mr. Barnard's last field notes, which make our premises doubly sure. However, it is most interesting to see that Mr. G. M. Mathews in his great work *The Birds of Australia* has found such subtle distinctions in two apparently nearly related birds that he has placed one in a new genus—*Ptilotina.*—A.J.C.]

Meliphaga gracilis (Graceful Honeyeater).—Observed in company with *M.*

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*These calls are difficult to describe on paper. The note of *lewini* is a quick running note, or succession of notes run together; that of *notata* is a short "chou, chou, chou," uttered four or five times.—H.G.B.

†Campbell: *Emu*, Vol. XX., pl. 5, p. 63.

notata on the lowlands; it was not seen on the range. Several of their pretty moss-covered nests were found, mostly containing two young.

Meliphaga fusca (Fuscous Honeyeater).—Seen about Kirrima station in iron-bark and bloodwood forest country.

Meliphaga macleayana (Macleay Honeyeater).—Generally found about flowering trees. They are said to be very fond of oranges, piercing the rind with their strong bills and sucking the juice therefrom.

Meliphaga flava (Yellow Honeyeater).—Seen in the coastal parts. One nest found contained two eggs slightly incubated.

Meliornis niger (White-cheeked Honeyeater).—Found along creeks on the tableland where the red-flowered Callis lemon tree was in bloom.

Myzantha melanocephala (Noisy Miner).—Seen on Blanco Creek, near the Herbert River gorge.

Philemon yorki (Helmeted Friar-Bird).—Fairly common, and nesting in company with the Yellow Fig-Birds.

Philemon argenticeps (Silver-crowned Friar-Bird).—Mostly observed in forest country, about flowering trees. As a rule they do not nest in company with other birds, as does the Helmeted Friar-Bird.

Philemon corniculatus (Noisy Friar-Bird).—Numbers of these birds were feeding on the flowering tea-trees, about the Murray swamps, and in company with Yellow-throated Friar-Birds. These two birds had evidently been driven from the tableland by drought, as they left the coastal parts after the first rains. They were afterwards seen in numbers about Kirrima station, on the tableland.

Philemon citreogularis (Little Friar-Bird).—Notes on the above species refer to this bird also. They were not breeding owing to the severe drought.

Anthus australis (Australian Pipit).—This was the only one of the Lark tribe seen. A few birds visited the Upper Murray but only remained a short period. They were plentiful further south, about Ingham.

Donacola castaneothorax (Chestnut-breasted Finch).—A few birds seen in blady grass on the Murray and also in the cane grass growing along the creeks at Kirrima station, on the tableland.

Bathilda ruficauda (Star Finch).—Seen in small flocks about swampy localities, where they keep to low bushes and tall grass. Their bottle-shaped nests are often placed in trees, at from ten to thirty feet from the ground.

Neochmia phaëton (Crimson Finch).—Seen in cane-grass and bullrush swamps; it nests in pandanus palms and also in orange-trees about the settlers orchards. Unlike most Finches, they do not build a spout to their nests, but build the nest round with a small entrance towards the top. The nests much resemble those of bush rats.

Oriolus sagittatus affinis (Olive-backed Oriole).—To be found generally in the forest country, or at the fruiting trees on the edge of the scrub.

Oriolus flavocinctus (Yellow Oriole).— Found about the mangroves and plentiful along the Murray River, where they were nesting in trees overhanging the water. A set of three eggs was taken during the hot weather in January, but were addled.

Chibia bracteata (Spangled Drongo).—These birds arrived from the north in November but did not commence breeding till the middle of December. While I was watching a pair of Honeyeaters (*M. gracilis*) feeding a young bird, a Drongo darted down and caught the young Honeyeater and flew off with it.

Aplonis metallica (Shining Starling).—These birds arrived in the district in large flocks in November and at once got busy with their nesting. Only the tallest scrub trees were selected. From their numbers one would certainly say they are not decreasing.

Ailurœdus melanotus (Spotted Cat-Bird).—Common in the scrubs, their peculiar cries being often heard.

Scenopœetes dentirostris (Tooth-billed Bower-Bird).—Seen among the ranges behind Cardwell and they were common on the Kirrima range; in fact, were the most common birds of those scrubs. Their curious playgrounds were often observed in the more open scrubs. They are very noisy when playing and keep up an incessant chatter, which is often very puzzling as it is hard to locate the sounds. Though I kept a sharp lookout for their nests, only one was found, and that by noting the bird fly into some vines high up in a scrub tree; this nest contained two young. These nests could only be found by observing the birds building, and I was evidently too late for this. On my return from Kirrima Station, towards the end of December, I noticed that many of the bowers, or rather playgrounds, were deserted, showing that the breeding season was over.

Ptilorhis victoriæ (Victoria Rifle-Bird).—These beautiful birds inhabit the dense scrubs of the highlands. They were not nearly so plentiful as when I visited the district in 1916. A few were observed in the scrubs of Hinchinbrook Island, also in the ranges at the back of Cardwell and the head of the Murray. They did not appear to be breeding.

Strepera (Bell-Magpie) (Probably *S. graculina*).— A bird of this genus was seen and heard on several occasions on the range, but was not identified.

Cracticus nigrogularis (Pied Butcher-Bird).—Seen about the tableland and about Kirrima Station, where it came into the garden.

Cracticus quoyi (Black Butcher-Bird).—This bird was fairly plentiful in the mangroves and scrubs about Cardwell, and I found it breeding in the mangroves on the Murray river, where it was fairly numerous. It was also observed on the top of the range. When in the Cardwell district in 1916 I took note of this bird and was inclined to think it was slighter in build than the Cape York bird. On that occasion I only observed a single rufous bird, and that was at the beginning of November. On this trip I took particular notice of these birds and found them breeding at Cardwell early in October. Three nests were found containing eggs, and at each nest both the parent birds were black. Again, on the Murray, I took a set of eggs in November. At this nest both birds were black. I then left for the tableland, returning to the Murray at the end of December. From then till the end of January I examined three nests with young birds ; two of the nests had three young and the third had two. All these young birds were rufous and the parents black. I also saw two lots of three young birds being fed away from the nests, and these were also rufous and the parents black. This points conclusively to the fact that the rufous bird is immature, though occasionally the immature bird may mate before assuming the adult plumage. (I have seen this occur on rare occasions with *C. nigrogularis*). On a trip to Cape York many years ago I examined a nest of *C. rufescens* or *quoyi* and found three young *all black*. It would require careful measurements of the birds from Cape York and the Cairns or Cardwell districts to determine if there is a difference. There may be a " break " between, as there is with the Scrub-Turkeys, *A. lathami* and *A. purpureicollis*.

Cracticus torquatus (Grey Butcher-Bird).—Seen in the hilly country along Blenco Creek and near the Blenco Falls at the Herberton Gorge.

Gymnorhina tibicen (Black-backed Magpie).—Seen on the tableland near Kirrima Station.

A Brown Hawk's Record.—Whilst collecting eggs as a youngster I found a nest of a Brown Hawk (*Ieracidea berigora*) with two eggs in it. I took one, as my mate said that they would lay again if one was left. The following week-end I climbed to the nest again and found three eggs. I came away with two. This was considered a lucky find, as all the egg-collectors wanted Brown Hawks' eggs, so when Saturday came out I went again, and climbed the tree. Again there were three eggs, one quite warm. The Hawk was not far away, but she did not worry me. I took two, meaning to continue doing the same thing every week, but the opportunity did not come my way for about two months. Then I brought my mate and a sugar-bag with a lot of wool in it and a long piece of string. I climbed to the nest but was badly disappointed to find three chicks and one addled egg. I had expected at least 20 ! The following year I took two eggs from the same nest, and eight years later this nest was robbed by my younger brothers.—J. J. DE WARREN, Dungog, N.S.W.

The Rock-Warbler : A Monograph.*

BY K. A. HINDWOOD, R.A.O.U., Chatswood, Sydney.

IN the Rock-Warbler (*Origma rubricata*) New South Wales possesses a very remarkable little bird. Strictly limited in habitat and confined only to certain situations, the species challenges attention also because of its remarkable nesting habits.

The harmony of birds with their surroundings is rarely better exemplified than in the case of this species, which, being dark-grey above and reddish-brown beneath, with a throat washed with grey, appears to merge into the ferruginous, weather-beaten sandstone boulders that form its true habitat. But for its habitual restlessness it would be difficult to discover at any time.

The southern half of the Hawkesbury sandstone district constitutes almost exclusively the habitat of the Rock-Warbler. This V-shaped area is bounded to the north by a line extending in a westerly direction from Wyee and terminating at Newnes ; to the west by a line from this point in a southerly direction, west of Moss Vale thence easterly to Nowra and by the South Pacific Ocean generally northerly to the point of commencement.

Within this definition its usual haunts are ravines and gullies and the steep, rocky sides of hills contiguous to water. The Rock-Warbler is always found near permanent water, supposedly because the most suitable type of country exists thereabouts. Nowhere is it more generally distributed than in the rough country immediately surrounding the Wianamatta shale beds or the Sydney basin. This oval-shaped depression is almost uniformly flat, and roughly speaking, is bordered by the following towns : Parramatta, Windsor, Penrith and Picton, with a narrow strip extending south of Sydney to Botany Bay. There is no record of the existence of *Origma rubricata* in this area ; the reason is obvious. The highest point at which the Rock-Warbler has been observed is at Jenolan, approximately 3,000 feet above sea level. The precipitous country around the shores of Broken Bay, and also at Sydney Harbour and Port Hacking, is favoured by this bird. Only in two instances has the Rock-Warbler been observed outside the Hawkesbury sandstone ; at Jenolan Caves, by A. J. North (recorded in his private notes of 1892), and at Mudgee.†

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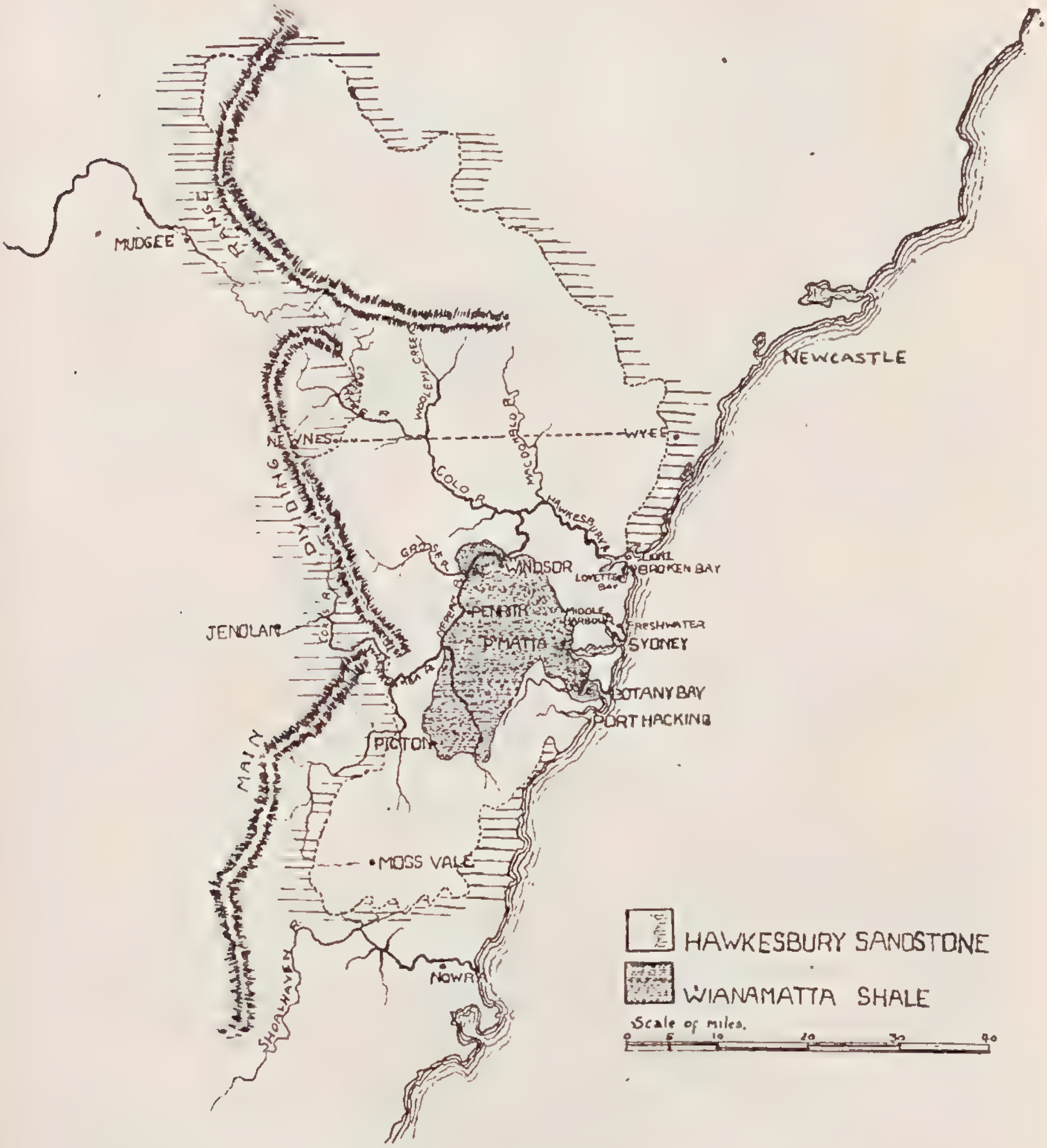
*It is a curious thing that the Rock-Warbler has not previously claimed the close attention of contributors to *The Emu*. Here is a bird that any good observer can find at any time of the year within a few miles of Sydney, and one, moreover, that stands in a genus by itself ; yet in twenty-five years only two or three notes, of the scantiest description, relative to this unique species have appeared in the journal of the R.A.O.U. Without bothering to speculate upon this puzzle, we may find cause for gratification in the fact that the present paper, the most thorough monograph yet written on *Origma*, is submitted by one of the youngest members of the Union. Much the same thing can be said of Mr. Chaffer, author of " Photographing the Rock-Warbler " ; though young in ornithology, he has secured unique pictures under difficult circumstances. The two articles, written independently, were sent to *The Emu* within a few days of each other.—EDITOR.

†Campbell, *Nests and Eggs of Austr. Bds.*, Vol. I., p. 226, 1901.

It is interesting to note that both localities are situated respectively in Silurian and Devonian areas, the component parts of which include a large proportion of sandstone. The Jenolan Caves are, of course, mainly of limestone formations, which are, incidentally, the only other suitable type of nesting country for the Rock-Warbler.



DISTRIBUTION OF THE ROCK-WARBLER.

It is noteworthy that the whole of the localities where the Rock-Warbler is known to occur are situated at or near streams which connect with the Hawkesbury-Nepean Rivers or with adjacent tributaries. In this way it has almost undeniably extended westwardly from the Nepean, to the Warragamba, finally reaching the Jenolan or Harry's River; also, in a like manner it has probably followed the Colo River to the Capertee, eventually occurring at Mudgee.

A most singular thing is that *Origma* has not been recorded in the Hawkesbury sandstone north of the limitation given. As this area is, in extent, equivalent to the southern portion, there must be some strong factor governing the apparent restriction of range. A comparison of the physical structure of the two areas will reveal a probable explanation; it will be seen that while the southern half is drained by a great network of rivers, with the consequent broken country affording ample and ideal haunts for the Rock-Warbler, the northern portion, except for the south-western corner, is, in this respect, comparatively bare and more or less covered with surface soil.

From the foregoing facts it would appear that the various rivers extending fanwise from the Nepean-Hawkesbury Rivers have been the highways by which this bird has extended its habitat to suitable localities. Hence, it is not unlikely that it has followed to their sources the two main streams which eventually enter the Hawkesbury River from the northern area, although as yet unrecorded. These streams are the Macdonald River and the Woolemi Creek. Lying north of the north-western corner of the Hawkesbury sandstone is a fairly large area of Triassic sandstone, corresponding with the Hawkesbury stage, but separated from it by belt of basalt and also by the main dividing range. Expansion of *Origma* in that direction is thus scarcely possible.

Sandstone country, with its wind-blown caves and overhanging rocks, to the cornices of which the Rock-Warbler attaches its pendant nest, seems to be essential for the propagation of this curious bird. Thus, a general extension inland would be limited, except where suitable adjoining limestone outcrops are to be found. The land to the west of the Hawkesbury sandstone is composed chiefly of quartzite, slate and granitic rocks, which do not " eat " or weather away in a characteristically sandstone manner; instead, they tend to become more or less smoothed by the elements, and, in consequence, few if any nesting sites exist.

Another highly important, though somewhat variable influence, governing the range of birds, is the food value of different types of country. As the Rock-Warbler procures its sustenance from or near the ground, it has a consistently ample supply of small insects, which are abundant in the Hawkesbury sandstone but not so plentiful immediately outside this area.

The southernmost boundary is only a few miles in extent, and strictly speaking is not within the Hawkesbury sandstone formation; it is, however, mostly sandstone country, and therefore entirely suitable as a habitat for the Rock-Warbler. Mr. N. Chaffer observed the species at Nowra in December, 1925, near the Shoalhaven River.

Considered strictly insectivorous, the Rock-Warbler feeds chiefly on small insects which it secures by creeping in crevices and cavities and exploring the under-surfaces of overhanging rocks and low-lying boulders. Apparently a portion of its food is obtained from among the rotting leaves and vegetation with which the ground is strewn. Evidence supporting this statement was published in *The Emu,* Vol. IX., p. 221, 1910; and also Vol. XI., p. 85, 1911, by Dr. J. B. Cleland, who records the results of examinations of the crops of various Australian birds, included among which were those of two Rock-Warblers, taken separately at the Hawkesbury River in June and November, 1909. One contained dipterous larvae and parts of beetles' wings; both held small seeds and parts of seeds. This departure from an insectivorous diet is, in all probability, only local.

On one occasion while watching a family of these birds, I saw one secure a grub from a small bush, and after hitting it against a rock three or four times give it to another bird which had been intently watching the process. This latter bird, probably a young one, before eating the grub imitated its parent's actions. Shortly afterwards one of the Rock-Warblers flew on to a small shrub a few feet from the ground, but was almost immediately chased back again by an irate Striated Thornbill (*Acanthiza lineata*) which happened to be feeding in the tree.

In moving over the ground the Rock-Warbler hops with rapidity, and flits from rock to rock in a most restless manner; indeed, it is seldom still, but continually moves its body from side to side. So swiftly does it hop at times that it appears like a rolling ball. When searching for food it will sometimes enter under low shelving rocks or similar situations, where owing to the confined space it is unable to hop, it will then creep about, keeping its body low down and resembling in attitude a small rodent.

Occasionally a bird will hover in the air and secure an insect from beneath a jutting rock; especially is this the case with a species of small moth of which it seems particularly fond. Quantities of spiders and the contents of their egg bags are also consumed. The amount of food procured other than that from the rocks and debris is almost negligible.

John Gould, from his own observation, states of this bird: "Nor have I ever seen it perching on the branches of trees; indeed it would seem to have an aversion to so doing." Gould also quotes Caley as saying: "I never observed the min trees or bushes." The Rock-Warbler will, however, sometimes resort to the branches of trees other than small shrubs, and it is not uncommon, during the breeding season, to see birds fly upwards of ten feet from the ground to obtain a more commanding view of an intruder. Sometimes a bird will fly to the summit of a boulder, utter a few notes, and then, suddenly, will seemingly fall backwards, and as if drawn by some magnetic force alight on the vertical face of the same or a nearby rock. There, with the greatest ease, it will move about in a peculiar jerky manner. It is quite common to see birds hopping over the upright faces of small precipices searching for insects.

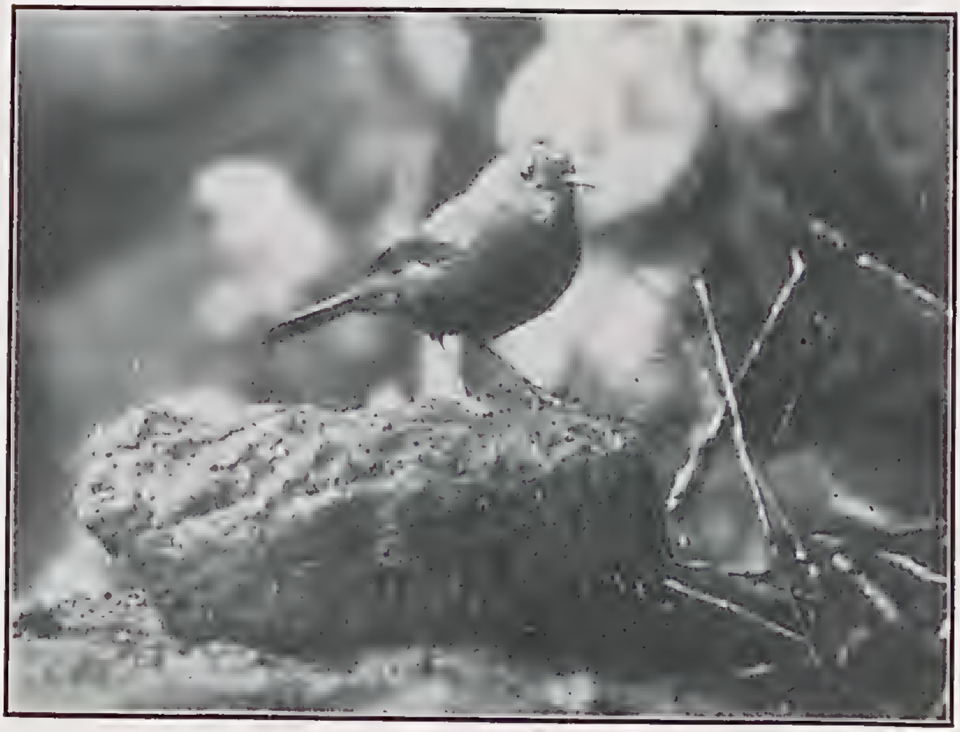
On seeing its young in danger the fearless nature of the Rock-Warbler expresses itself; the parent will approach within a few feet of one, and with outstretched and drooping wings, excitedly and almost incessantly utter a peculiar harsh note, resembling the alarm note of the Brown Thornbill. If disturbed during the early period of brooding, most birds will not adopt this attitude; it is only when incubation is well advanced and for some time after the young have left the nest that some parent birds become agitated when either eggs or young are in danger. Of course, the actions of individual birds of any species will vary greatly, but with this particular species the majority are fearless.

I have repeatedly chased Rock-Warblers with the intention of ascertaining the extent of their flight. Never have they flown more than twenty or thirty yards, and always the flight was within a few feet of the ground. The flight is rapid and continued, resembling that of the Blue Wren. If undisturbed they seldom fly more than a few yards, except perhaps when they cross a gully or stretch of water. Mr. H. Wolstenholme, R.A.O.U., observed the Rock-Warbler on Lion Island, at the entrance of Broken Bay, and I also observed two birds on the broken rocks near the foreshore. As the nearest land is half a mile away it will be seen that this bird is capable of a sustained flight.

The usual note of the Rock-Warbler is a shrill, melancholy call, which can be likened to " good-bye," and which is uttered three or four times. A modification of this, a high-pitched and somewhat shorter note, is also uttered intermittently. Both calls seem to express the solitary nature of the species. When searching for food, Rock-Warblers will sometimes call for a considerable time, uttering a rasping but slightly liquid note ; this call is generally used when the birds are in close proximity to one another. When separated by a considerable distance they use either of the two calls already mentioned. During the period immediately after the young birds have left the nest and until they leave their parents, the older birds are much more noisy than at any other time.

The nest of the Rock-Warbler is one of the wonders of bird-architecture, and in some respects it is unequalled. Suspended from the roof of a cave on the under-surface of some overhanging rock, or other chosen place, it has a fascination all its own. The supporting flat mass of silky spiders' webs is composed for about two inches ; sometimes less, often more, entirely of this material, after which the globular-shaped nest of root fibres, moss, bark fibres and grass is gradually built in, the spiders' webs extending for another three or four inches before being superseded by the main structure. The outside of the nest is partly covered with cob-webs or pieces of bark fibre or with both, and at times with the egg-bags of spiders.

When commencing building operations the birds usually select a flake of rock and wedge or hammer the spiders' webs into place with their bills. To give the webbing gripping power, they cover it with a secretion, probably saliva, which tends to bind it more firmly in position. The weight of the nest then is not directly borne by the whole of the suspensory material, but is broken at right angles where the material overlaps the edge of the flake ; thus its holding strength is greatly increased. When nests are placed in natural positions this is the only means by which they can be suspended. The outside wall of the nest is constructed first, and this, being of material that will bind or knit moderately well, is able to hold the inner nest.



ROCK-WARBLER APPROACHING NEST.

Photo. by N. Chaffer.

TYPICAL HAUNT OF THE ROCK-WARBLER, NEAR SYDNEY.

Photo. by K. A. Hindwood.

This inside " nest " is easily separable from the outer covering, and is invariably composed, almost entirely, of different materials, which, although productive of warmth, do not knit on a similar scale to the outside wall.

An average nest measures ten inches in length and a little under five inches in diameter at its widest part, which is, as a rule, slightly below the centre. It is ovate, thus tapering at both ends. (A freak nest taken by the late Robert Grant, at Lithgow, was of abnormal length, measuring three feet over all.) The entrance is situated where the nest is widest, and is generally two inches in diameter ; whereas some nests are built with the top of the opening forming a hood, others are constructed with a protruding under lip.

Both birds take part in the building of the nest, an operation which covers a considerable period ; usually three to five weeks elapse before the task is completed. The nesting cavity is not made until the nest is almost finished, when it is lined either with fine grass stalks, bark fibres, the seed cases of Scotch thistles, or feathers. The cob-webs with which most nests are partly covered, as well as the green and brown fern-like moss that is interwoven with the wall of fibrous roots, probably serve the double purpose of making the nest closely resemble its surroundings and of binding it more firmly. Moss is always used in the construction of nests.

Although in comparison with the bird the nest of the Rock-Warbler is bulky, it is not heavy. The average weight is 2 oz. or a little less. The materials used are dry and light, and if it was not for the outer wall of root fibres the nest would never hold together ; as it is, if shaken vigorously it will fall to pieces. The size of the suspensory material is in no way governed by the bulk of the nest ; it may be an inch in width for a big nest and perhaps three inches for a smaller one. Yet again it is sometimes of two separate pieces.

Nests built in natural situations are usually from twelve inches to four feet above the ground ; occasionally, they are built above this height. If undisturbed, the Rock-Warbler will use the same nesting site for years, and very often, when nests are well protected from the effects of wind and rain, will re-condition the nest used the previous season.

The following schedule and accompanying detailed notes will convey some idea of the placement and composition of various nests.

Nest	Site	Length of Nest	Height from Ground
1	Crevice 2 feet wide	8″	36″
2	Under overhanging rock	10″	10″
3	Under overhanging rock	10″	15″
4	Cavern	11″	27″
5	Cave formed by fallen boulders ...	11″	45″
6	Uncompleted sewer shaft	20″	—

NEST NO. 1 :—Attached to a small, jutting piece of rock on the vertical face of a crevice and a few inches from a large boulder which had fallen overhead and formed a natural shelter. The back of the nest rested against the face of the rock. Composed externally of root fibres and a few grass stalks; internally, of thin flat pieces of tea-tree bark, parts of leaves and fine bark fibres; lined mostly with fine grass, also a few of the seed cases of Scotch thistles. This nest was much smaller than is usual, being only eight inches in length. When discovered it contained two eggs; the hood, which was unusually large, was pressed against the opening. Thinking that the birds had resorted to this ruse to deceive any inquisitive Cuckoos, I did not, on this occasion, inspect the eggs. Examination of the eggs a fortnight later revealed the extraordinary fact that both were punctured; apparently the sitting bird had pierced them with her sharp claws. But it is not beyond possibility that a snake was responsible for the mischief. The birds had deserted the immediate neighbourhood of the nest.

NEST NO. 2 :—Situated in a secluded gully at the head of a tidal creek. Composed externally of root fibres and green moss, internally of decomposed leaves, shreds of bark and grass stalks, lined with feathers.

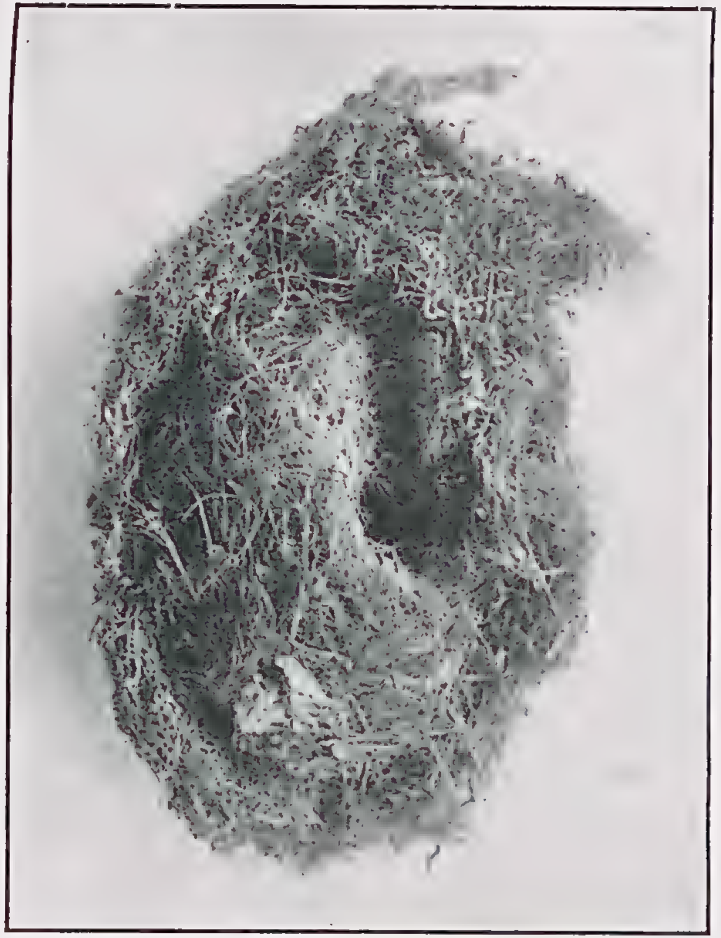
NEST NO. 3 :—Almost identical with the foregoing nest, the two being only six feet apart, but under different rocks. This nest was of much more recent construction and had but lately been vacated by the birds; in all probability nest No. 2 was the one used by the same pair of birds the previous year. Included in the linings of both nests were a few of the breast feathers of the Yellow Robin; a nest of this species was nearby. Both nests were partly covered with spiders' webs.

NEST NO. 4 :—Situated on the side of a steep, rocky hill, about fifty yards from tidal water. Composed externally of root fibres, a little moss, and a few bark fibres; internally of parts of leaves and a little fine grass; lined chiefly with the seed cases of Scotch thistles, and covered with many slaty-grey spiders' webs.

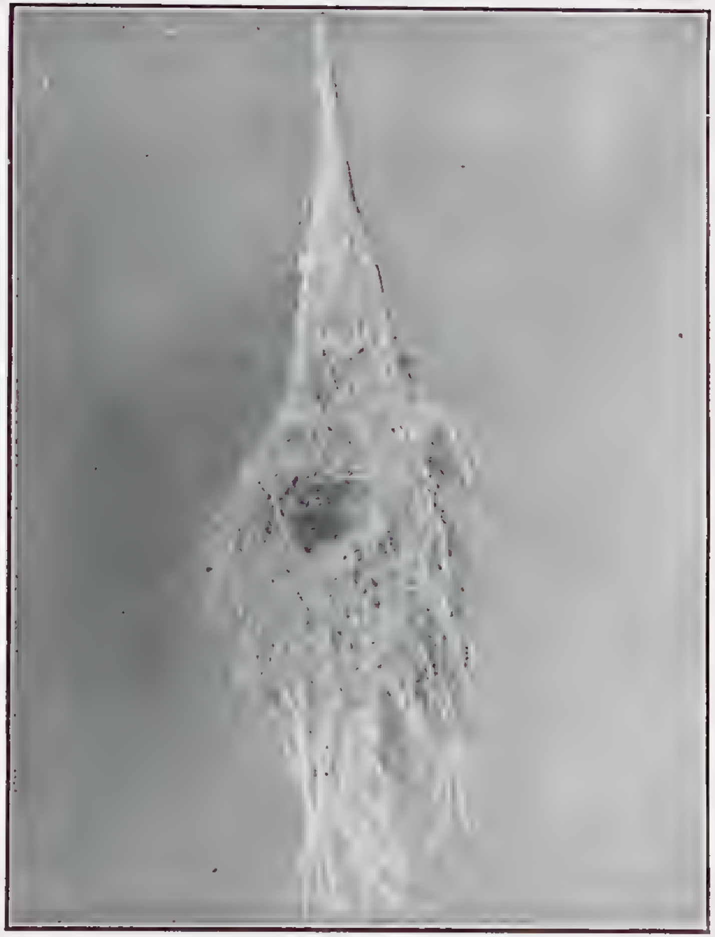
NEST NO. 5 :—Situated in a secluded and heavily timbered gully. Composed externally of a large quantity of moss, also root fibres; internally of dead leaves and grass; lined exclusively with Scotch thistles. Noticeable among the scanty covering of spiders' webs and egg bags were some of a bright green colour.

NEST NO. 6 :—Situated in an unfinished sewer shaft under a wooden landing, and thirty feet from the surface. Composed externally of root fibres, fine bark fibres and small pieces of rope ends; internally of bark, grass and pieces of rope, also numerous small pieces of paper and leaves; lined mostly with fine rope fibres; covered with a few spiders' egg bags. The exceptional length of the nest was due to the strip of bark to which it was attached, and which was almost as long as the nest itself.

The site chosen for this nest is undoubtedly one of the most singular ever used by any bird. While drinking from a tap at the head of the shaft, I noticed a Rock-Warbler fly down with some rope. On descending, I had reached the second landing when the startled cries of the bird heralded an early denouement, and on going below this staging I could see in the dim light an almost completed nest



ROCK-WARBLER'S NEST (No. 5) WITH OUTER WALL BROKEN AWAY, SHOWING INNER "NEST."
Photo. by F. Booker.



ROCK-WARBLER'S NEST (No. 6).
Flashlight photo. by F. Booker and
K. A. Hindwood.

attached to a strip of bark hanging from one of the supporting cross beams. For a few moments I was subjected to a severe scolding. However, the bird soon flitted away, and except for the continuous dripping of the water soaking through the sides of the shaft, which at this depth filled the air with a fine spray, the place was unnaturally quiet. The nest was so built that it escaped the moisture caused by the seepages.

Remarkable as it may seem, the nest was constructed whilst workmen were excavating rock from the main tunnel. This shaft is one of many sunk in order to expedite the cutting of the tunnel, in this instance one hundred and sixty feet below the surface. The loose rock was brought to the surface in a cage which passed within two feet of the nest, and which was in continuous use from 8 a.m. to 5 p.m. excepting Saturdays and Sundays until October 14, 1925. The nest was completed two days later, and from then on the birds were seldom disturbed. Fortunately, I was able to record, at intervals of one week, the habits of this pair of birds while nesting. They are given hereunder :

18th October :—Nest contained one egg. Although I was at the nest for twenty minutes taking photographs, the birds were not seen.

25th October :—Bird sitting on three eggs ; on being disturbed she silently flitted away.

1st November :—Eggs dull and slightly stained ; sitting bird very tame. While but a few inches away, I flashed an electric torch on her, yet she remained on the nest and seemed only curious.

8th November :—Eggs heavily incubated ; bird absent when I reached the nest but returned shortly with a feather in her bill ; flying on to the opening she placed the feather inside, and settled on the eggs. During this time I was within two feet of the nest.

15th November :—Nest contained two young birds, the third egg having failed to incubate. Except for a scanty covering of grey down the babes were devoid of feathers. When I touched the nest they craned their necks forward, and with gaping mouths emitted feeble squeaks, blindly seeking for food. The parent bird was away during my observations and did not appear till I had left the shaft. On seeing me she became agitated, but after a few moments of indecision, flew down. I could hear her uttering many unusual and joyful notes as she fed her young.

22nd November :—Wing and tail quills developing on young birds; eyes commencing to open ; the nest was considerately wet on the outside owing to the excessive seepage caused by recent heavy rains.

29th November :—Nest contained only one young bird, which was little more than half fledged ; the wing and tail feathers were well developed.

6th December :—The nest was deserted and I could not locate the bird in the neighbourhood of the shaft.

It is doubtful if either of the young birds left the shaft ; probably the bird that was missing on November 30 fluttered out before it could fly and fell to the bottom of the shaft. As it would be extremely difficult for a young bird to fly upwards for thirty feet, the second one, very likely, shared a similar fate. So ended in disaster an attempt worthy of perfect success.

With the exception of nest No. 5, the whole of the preceding nests were at Middle Harbour, near Sydney, and within an area of perhaps ten square miles. Nest No. 5 was at the head of Lovett's Bay, Pittwater, some twenty miles north of Sydney.

Many are the unusual nesting sites resorted to by this species. Within a few hundred yards of the shaft mentioned, a pair of Rock-Warblers suspended their nest from a lamp bracket in one of the rooms of an old stone house. Entrance was gained through an open fanlight. A broken ceiling-board in the front room of a cottage at Fisherman's Point, Hawkesbury River, has been used for four successive years as a nesting site, and presumably by the same pair of birds. The ornithological notes of A. J. North, subsequent to the publication of the Aust. Museum Catalogue, 1889, bound with the author's copy of this work and now in the possession of the Mitchell Library, contain the following remarks on *Origma* :—"1892—E. H. Webb found a nest of this species at Moss Vale. It was built in a hollow log and suspended to the tip ; a nest has been built in the engine room of the quarantine station for five years ; nest attached to stalactite in Nettle Cave, Jenolan." A pair of birds nested in Mr. N. W. Cayley's studio at Cronulla, Port Hacking, for some years, and in time became very tame. Other interesting remarks relative to curious nesting of the Rock-Warbler appeared in *The Emu*, Vol. V., 1906, p. 233, wherein is mentioned the fact that a pair of birds nested successfully in an occupied tent at Freshwater, near Sydney.

Reasons that stand out most clearly why the Rock-Warbler so often resorts to nesting-sites other than natural situations are : The comparative freedom and protection from natural enemies afforded by the presence of mankind ; the paucity of suitable nesting caves, and the greater facility afforded, in almost every instance, for attaching the upper portion of the nest.

The three eggs which constitute a clutch are laid on consecutive days. Their colour is white and for a few days they possess a slight sheen, which, however, disappears within a week. The period of incubation varies slightly ; it is generally twenty-three days. Three weeks elapse before the young birds leave the nest ; they do not return to it, but may rest at night under the same or a nearby rock shelter.

During favourable seasons odd pairs of birds may commence building in July, but as a rule nidification commences in August, and unless the nest or eggs are destroyed only one brood is reared each season. In most cases the young leave the nest in October or November, and until the end of December or the early part of January they stay with the parents, which continue to feed them occasionally. It is difficult to distinguish the young birds from their parents a fortnight after they have left the nest. The youngsters, however, are slightly duller in colouration ; they are also much quieter and do not appear as restless as the older birds.

During the autumn and winter months Rock-Warblers are seldom heard. They keep to the secluded gullies and the undergrowth, and only occasionally utter a note sufficiently loud to be heard more than a few yards away.

As for the solitary habits of the Rock-Warbler, seldom is it that more than one pair or a family of birds are noticed in the same part of a gully. The range of any one pair of birds will, perhaps, cover a radius of only half a mile. Early ornithologists were influenced by this trait, and Lewin,* placing the species with the Warblers, named it *Sylvia solitaria*. Latham,† fifteen years later, regarded it as a Fly-catcher—*Motacilla solitaria*. However, Mr. J. R. Kinghorn, R.A.O.U., zoologist of the Australian Museum, writing in *The Emu*, Vol. 24, p. 140, makes this surprising record of gregariousness among Rock-Warblers.—" *Origma rubricata*—About twenty of these birds were seen in a flock, hopping over a smooth gorge a few hundred yards from Wheeney Creek camping area. Other smaller flocks were seen on the opposite side of the hill and a few pairs were noted at Upper Colo."

The enemies of the Rock-Warblers are many. Foremost among them, perhaps, is the voracious goanna or lace monitor. Most of the destruction caused by these reptiles is during the breeding season, when it is an easy matter for them to pull down a low-lying nest and eat the contents, whether eggs or young. North records having seen a large water lizard (*Physignathus leseuri*) feasting on eggs from the nests of two Rock-Warblers. Rats are not so destructive, as it is difficult for them to reach nests even when they are not far from the ground. Perhaps native cats take a few birds, and snakes undoubtedly eat either eggs or young when the occasion presents itself.

The Fan-tailed Cuckoo (*Cacomantis flabelliformis*) occasionally burdens the Rock-Warbler with the task of rearing its offspring. On numerous occasions North found the eggs of this parasitic bird with those of *Origma*; in every instance there were only two of the Rock-Warblers' eggs. Mr. S. W. Jackson, R.A.O.U., collected two or three such sets and Mr. N. Chaffer also secured a set a few years ago.

With a bird so curiously local in its habits and so restricted as to its range, the possibility of inbreeding must be ever present. The solitariness of Rock-Warblers generally, and the fact that the young birds do not stay with their parents any length of time, may be forms of defence against such a happening.

The first record of the Rock-Warbler—at the time Ruddy Warbler—is by Latham in 1801. Prior to Gould's description of the habits of this bird, in 1848, ornithologists had given but meagre information regarding this singular bird.

A more thorough description of its habits, based on notes by E. P. Ramsay, appearing in *The Ibis* for 1863, was given by Gould in his *Handbook* (1865). Following this there appeared in A. J. Campbell's *Nests and Eggs* (1901) other interesting facts. But by far the most

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**Birds of New Holland*, Vol. I., pl. XVI., 1808.

†*General History Bds.*, Vol. VI., p. 220, 1823.

extensive notes yet published are those contained in A. J. North's big work. In the *Catalogue* of the Jacksonian Oological Collection (1907), other very informative notes as well as some photographs appeared. Mr. A. H. Chisholm wrote a very interesting article on the bird, under the caption "A Fairy of the Sandstone," in the *Australian Women's Mirror* for January 16, 1925.

In conclusion, I wish to express warm thanks to my friend, Mr. F. Booker, whose enthusiasm in the dark-room, and where possible in the field, has helped me very considerably. I am also grateful for advice and assistance from Mr. W. A. Rainbow (Librarian of the Australian Museum), Mr. M'Carthy (his assistant), and Messrs. J. R. Kinghorn and A. H. Chisholm.

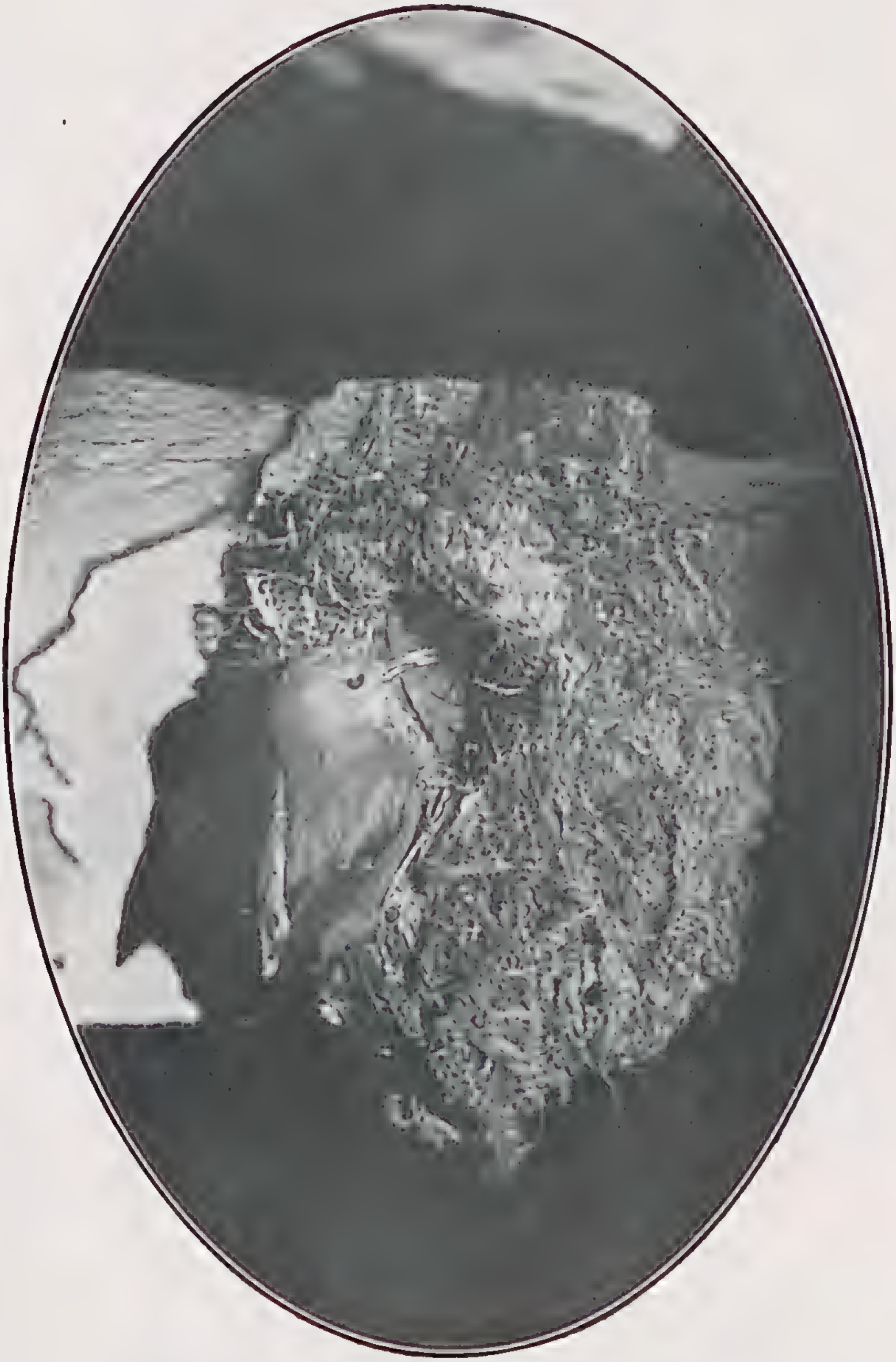
Photographing the Rock-Warbler.

By NORMAN CHAFFER, R.A.O.U., Chatswood, Sydney.

BECAUSE of that charming nest suspended from the roof of a cavern or beneath a shelf of sandstone, the Rock-Warbler is the "Hanging Dick" of many school-boys. And because it is found only "where dripping rocks gleam and where leafy pools glisten" (or in the vicinity of such spots) some other people know it as the "Cataract-Bird." To others again it is the "Sandstone Robin." In any case, the fact is that behind each of these names stands a very endearing little bird, one that attracts because of its novelty, its brightness, its picturesque habitat, its restricted range, and its unusual nesting habits. Having these points in mind, I count days spent in photographing the Rock-Warbler as among the most enjoyable of my experience.

On September 10, 1922, I found a "Hanging Dick's" nest with three young which offered some prospects of being photographed. I noticed that sunlight, somewhat diluted by passing through the leaves of the gum trees, could be reflected on to the nest with the aid of a mirror. The nest was situated in a low, dark cave in a small gully leading down to Middle Harbour, and was built above running water. The following week, armed with camera, tripod and mirror, I set out to try my luck. The "Hanging Dick" was on the nest when I arrived and I had almost to touch it before it flew off. Focussing was very awkward and uncomfortable in the low cave, and considerable manoeuvring was required to dodge the water dripping from the roof. The mirror was propped in position with stones at the cave entrance.

Soon the shrill call of the Rock-Warbler was heard and the bird came quickly, hopping and flying over the rocks. It went without hesitation on to the nest, notwithstanding that the cradle was brightly illuminated by the light reflected from the mirror. On alighting the feet clutched the front of the nest and the tail was spread out



ROCK-WARBLER AT NEST UNDER SHELF OF SANDSTONE:
Photo. (by N. Chaffer) taken with aid of mirror.

NATIONAL MUSEUM [illegible]

fanwise and pressed against the nest for support. When inside, the bird turned round and faced the entrance. The bird was quite fearless and seemed almost to ignore my presence. Using a stick I gently tapped the nest, but it merely held up its head and looked around. After considerable shaking and tapping of the nest, the bird came out, but only flew a few feet away and soon returned.

Most of the photos were taken direct with the antinous release, while seated some three feet from the nest. The bird often alighted on the tripod when approaching or leaving the nest.

Usually, when alighting on the nest the head would be thrust in immediately, mostly giving no chance of a photo. After each return the bird became more and more difficult to dislodge; I could wave my hand up and down a little distance from the nest without effect. In time, the small mother would tire of being forcibly ejected and would go away for fifteen or twenty minutes.

One trouble I found on developing my first lot of exposures was a blurred image in many of them, due to the swaying of the nest. On another visit I propped the nest at the back with a stick, but the " Hanging Dick " would have none of that—she made straight for the stick and several times dislodged it. Some of the photos I secured by blocking the entrance.

A second series of photos was taken with the bird on a stone approaching the nest. I sat at one end of the cavern near the nest to prevent the bird approaching from that direction, but even then she would often slip by me unawares. A few times I guided her with a stick to the stone upon which the camera was focussed. Sometimes she would even allow the stick to touch her, uttering only a note of remonstrance.

The young Rock-Warblers, by the way, were fed largely on moths. The parent birds would eat bread crumbs, but did not give them to the babes.

Quite a number of factors contributed to the failure of many of the large number of photos taken during 1922 and again during 1925. The comparatively long exposure necessary, 1/10th of a second at F.8, caused many of them to show movement. Then there was the swaying of the nest to contend with or a passing cloud or swaying branch partially obscured the sun. The mirror had constantly to be adjusted as the sun rose higher, and this fact accounted for some failures—the light in some cases was only reflected on portion of the bird.

I spent many hours photographing the " Hanging Dicks," and not a moment of the time is regretted. Seated comfortably in the cool shade of the cave, time passed quickly. Even during the absence of the bird there was plenty to interest. At the top end of the caverna miniature waterfall babbled musically, and from the tangled gully outside the crack of the Whip-Bird and the songs of many others could be heard.

A Review of the Genus *Cinclosoma.*

BY A. J. AND A. G. CAMPBELL, Melbourne.

FEW genera are so well distributed over the Australian continent as is the genus *Cinclosoma*. The largest species occupies the eastern highlands, including Tasmania and South Australia. In far interior regions, however, where, as has been elsewhere noted, bird-life has come under the stress of a steadily increasing aridity of climate, the genus is well represented by one or other of the " tawny " species.

Cinclosoma appear to be singularly virile birds, for these species have adapted themselves to conditions that have decimated or wiped out many other groups. In the newer tertiary regions of the mallee and the Nullarbor Plain separate and still newer species have evolved. The distribution map shows each species with a territory peculiarly its own, no two species being, so far, recorded in any one locality.

The discovery of the female *Cinclosoma castaneothorax*, and the re-discovery (after 70 years) of the male,* together with the naming of a new variety of *C. castanotum*† and the consequent clearing-up of some earlier, doubtful records of both species, make it opportune for a review of the whole genus. All available skins (120) have been brought together. This tabulation—a stock-taking, so to speak—will serve as a record of the characters and distribution of each species with variations, if any.

The writers desire to express their thanks for the courtesy extended to them by the Directors of various museums and other persons, by the loan of specimens. Without such friendly and valuable aid, this paper could not have been written. The institutions and collectors concerned are indicated as the specimens are noted in the article.

GENERIC CHARACTERS.

There are certain features common to all members of the genus, whether of coastal or interior habitat, which, to avoid repetition, may be set down under this heading. Two light face markings are (1) a brow stripe extending a considerable distance beyond the eyes with a tendency to curve down the side of the head, and (2) a cheek stripe extending from or near the gape to below the ear coverts. The wing is very distinctly marked with white, there being light tips, in the nature of spots to all wing coverts and most primary coverts. Flight feathers are dark brown, or fuscous, with lighter edges. The wing formula, as found in the respective lengths of the primaries, is of three factors only. The first feather is two-thirds the length of the second and always shows a splash of white on the outer web, at the tip. The tail, which is about the length of the wing, is black, largely tipped

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**Emu*, Vol. XXV., p. 152.

†*S.A. Ornithologist*, Vol. VIII., p. 138.

with white, except central feathers, which are usually of the same tone as the mantle. Under tail coverts are long and somewhat bulky. The tarsus is about one quarter the length of the wing.

The male bird in each species has black lores, together with a black streak below the eye. The throat is shining black, the breast wholly, or in part, black, and the flanks show lanceolate marks, or streaks, of black. The female is distinguished from the male by wing coverts and under tail coverts being largely dark brown, or fuscous, not black, and by the absence of any black marks upon the flanks. Lores are greyish, the throat grey, or mottled with white, and the breast grey.

1. *Cinclosoma punctatum.*

(Spotted Quail-Thrush).

This species was first described by Shaw from New South Wales. See *Zool. Nov. Holl.*, pt. 3, pl. 9. Figures: Gould, *Birds of Australia*, Vol. IV., pl. 4; Mathews, *Birds of Australia*, Vol. IX., pl. 423. Two females from the type locality are in the British Museum, Gould collection.

Examination of Skins.—5565 ♂, Lithgow, N.S.W. Forehead grey; remainder of upper surface olive brown, widely streaked black on back; scapulars rufous brown streaked black; ear-coverts olive brown; large spot on side of neck white; breast neutral grey, lower part white, a few feathers between tipped black forming a narrow black line; flanks and under tail coverts tawny olive, with prominent spot of black in centre of each feather, becoming a streak in longest coverts. Length, 10.5 in.; bill .75 in.; wing 4.4 in.; tail 4.3 in.; tar. 1.4 in.

5564 ♂, Lithgow, N.S.W. 5570 ♂, Cobbora, N.S.W. 8119 ♂, Cobbora, N.S.W. 5566 ♂, Wolgan, N.S.W. R.9562 ♂, Lockwood, N.S.W. These five specimens all resemble 5565, except in a slight individual difference of a certain wing feather, more fully noted under "Remarks." 5570, however, has slightly darker plumage, heavier markings on the back and more chestnut on scapulars.

5567 ♂, Grenfell, N.S.W. A smaller bird, paler above (wing edge grey); bill .7 in.; tar. 11.3 in.

5571 ♂, Ringwood, Vic. R.9557 ♂, Reeves River, Vic. R.9558 ♂, Victoria (Leadbeater coll.). 989 ♂, Mornington, Vic. 5376 ♂, Hazelwood, Vic. A peculiarity of these birds is a grey-edged feather on the wing—the innermost (largest) feather of the secondary coverts. Otherwise, all are similar to 5565.

5563 ♀, Lithgow, N.S.W. Smaller than 5565; lores greyish; brows buff; spot on side of neck ochraceous tawny; throat and abdomen tinged buff; no black below grey breast; flanks and under tail coverts spotted, as in male. Length 9.8 in.; wing 4.3 in.

5562 ♀, Mt. Irvine, N.S.W. Crown and back dark olive brown, streaks prominent; wing 4.2 in.

5572 ♀, Mornington, Vic. R.9559 ♀, Victoria (Leadbeater coll.). R.8388 ♂ Nyora, Vic., 10/12/1923. All resemble 5563 ♀, but the primary coverts of the last (as distinct from wing coverts) are shining black, not dark brown.

The foregoing specimens are in Nat. Mus., Melb., those numbers not prefixed R., in the H. L. White coll.).

* * *

D.449 ♂, Tasmania, like 5565, but whole of crown grey; flanks toned brighter ochraceous tawny.

(This and three following, lent by Tasmanian Museum).

D. 447 ♂, Tasmania. Like D.449, but black deep olive brown.

D.448 ♂, Cullenswood, Tas., 18/2/71. Dark like D.447 and with a few dusky fringes on the white of lower breast; primary coverts dull blackish.

D.450 ♀, Tasmania. Like 5563 but secondary coverts edged olive brown, not grey; throat mottled greyish; line of feathers below grey breast with subterminal black marks; throat mottled greyish; lower breast pure white.

176 ♀, Sandford, Tas. (Edwin Ashby coll.). Like D.450, but back greyer (deep greyish olive).

* * *

213 ♂, Blackwood, S.A., 12.10.1917. Like 5565, but smaller and greyer (deep greyish olive) except for one or two new feathers; crown and upper tail coverts grey. Length 10 in.; bill .7 in.; wing 4.2 in.; tail 4.2 in.; tar. 1.2 in.

S.157 ♀, Blackwood, S.A., 23/6/1917. Resembles 5563, but smaller; forehead only grey; wings edged grey; primary coverts partly edged whitish. (This pair in coll. of F. E. Parsons, Adelaide.)

(312) ♀, South Australia (lent by S.A. Mus.). Upper surface darker throughout than S.157, with broad central marks on back.

(313) juv., near Adelaide (lent by S.A. Mus.). Upper surface brown, brighter (brussels brown) on back with blackish edges; under surface whitish with dusky fringes, especially across breast; sides of neck ochraceous; primary coverts black tipped white; secondary coverts olive brown; wing and tail both 4 in.

R.9556 ♂, immature, Gisborne, Vic., Dec. 27, 1870. Crown greyer than 5565; throat and cheek stripes light buff, a few black feathers appearing on chin and lower throat; wing coverts buffy brown; shining black feathers on point of wing; black line below breast and prominent spots on flanks, but centre of throat and abdomen show dusky fringes (Nat. Mus., Melb.).

5569, nestling, Cobborah, N.S.W. Color brown fringed with black crescentic markings; inner secondaries edged chestnut; brows tinged buff; throat light buff with dusky fringes; breast and flanks tinged buff heavily edged black; abdomen white; length 6.5 in. (H. L. White coll.)

REMARKS.

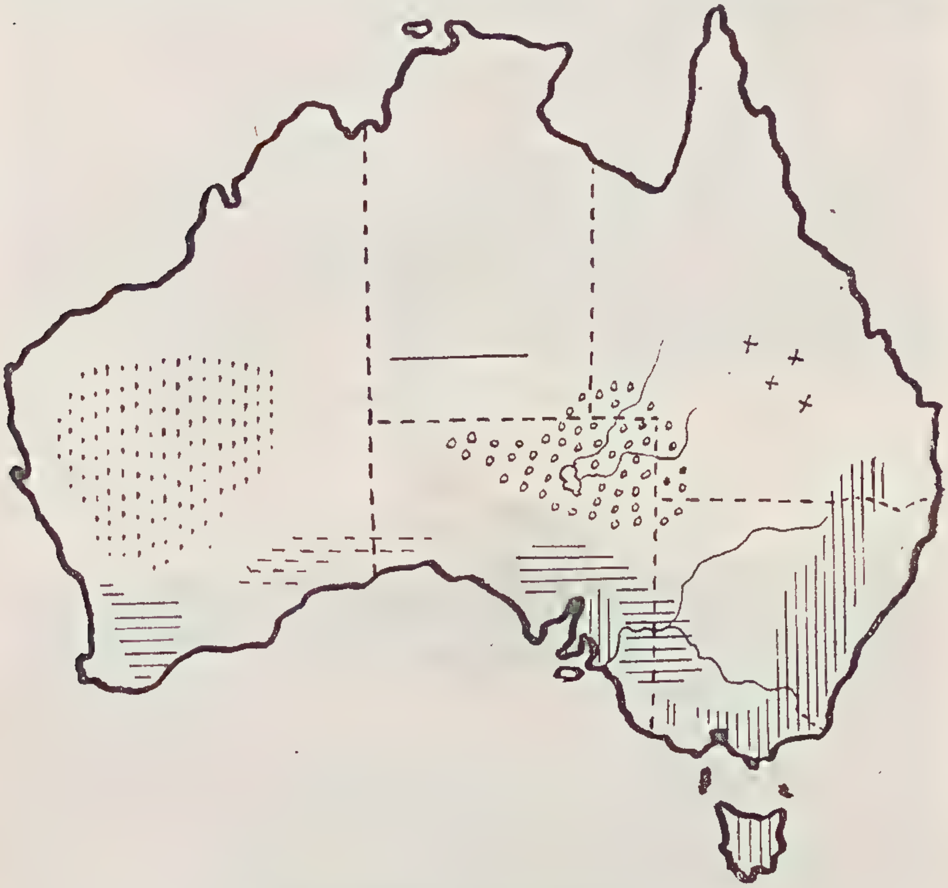
All the localities from which this large species is recorded are upon the old highlands of the eastern part of Australia, an area of approximately 150,000 square miles. Found also in Tasmania, it must therefore be considered the oldest of the genus. The specific characters are a well streaked back and well spotted flanks, while the grey breast is bounded on the lower portion by a narrow line of black feathers. The generic white mark on the cheeks is a large roundish patch and not in the nature of a streak as with other species. The female has this cheek patch a bright ochraceous tawny color, which with the absence of black on throat, or breast, or wing coverts, at once distinguishes her from the male.

Several specimens, presumably from the heavier forested hills, are darker in tone. To some extent, however, the lighter colored examples may be due to wear and exposure as summer time advances. One of the lightest is 213, a deep greyish olive, but on its back are several feathers, apparently new, which are olive brown in color.

South Australian skins are consistently smaller than average, although, it must be noted, that two from N.S. Wales, 5567 and 5562 also are small. The female specimen, S.157, is greyer about the wings and has an unusual whitish edge running up from the white tips on the primary coverts. Tasmanian skins, as far as the males are concerned, show no differences from those of the mainland, but the females, of which there are two examples, D.450 and 176, show what might be considered sub-specific* variation, because they have, crossing the breast, a line of feathers with black marks, which appear to be the remnant of the black line found in all male birds. Below this the breast is pure white, not toned with buff as in all the other females.

**C. p. dovei*, Mathews, *Nov. Zool.*, Vol. XVIII., p. 330.

A peculiarity of the male bird is the individual variation that is noted in *one* feather of the wing, namely, the innermost and largest secondary covert. Skin 5565 appears to be the common form where the outer web of this feather is grey, in contrast to the shining black of the remainder of the wing coverts. Skin 8119, Cobbora, is grey, but 5568, also from Cobbora, has the same portion entirely chestnut. Several others are grey tinged with chestnut, while one specimen, 5570, is grey edged with black.



DISTRIBUTION OF *Cinclosoma.*

Vertical lines : *punctatum*
Horizontal lines : *castanotum*
Broken lines : *alisteri*
Circles : *Cinnamomeum*
Crosses : *castaneothorax*
Dots : *marginatum*

The immature male, at first, resembles the female, and the method of change may be noticed in R.9556. The throat is buffy with a few black feathers showing on chin and lower portion. The black line across the breast is distinct, and the spots on the flanks very prominent, but the wing coverts are mainly buffy brown, the black shining feathers having begun to appear only on the point of the wing.

Skin R.8388 is labelled ♂, with a query against the sex mark, because it has every appearance of a female bird, even to the ochraceous patches on the sides of the neck. There is no reason, however, to doubt that it is a young male, in first plumage, after leaving the nest (December). It seems probable that this plumage remains for about a year when the stage showing in R.9556 is reached.

A young bird, or nestling, has an abundance of black in the form of crescentic edges to most feathers of the plumage, especially upon the back, scapulars, and breast. No. 313, with its lengthened tail, is but a step removed from 5569.

2. *Cinclosoma castanotum.*

(Chestnut Quail-Thrush.)

This was first described by John Gould from the belts of the Murray River (the Mallee), South Australia. Figures: Gould, *Birds of Australia*, Vol. IV., pl. 5; Mathews, *Birds of Australia*, Vol. IX., pl. 424. Type, 17225 (1563) ♂, is in the Academy of Natural Sciences, Philadelphia, U.S.A.

Examination of Skins.—The following 13 specimens lent by S.A. Mus.

516 ♂, Karoonda, S.A. Olive brown above, mantle with slightly darker centres; scapulars and rump bay brown; ear coverts brown; throat black continuous on to breast; sides of breast grey; flanks tinged tawny olive; centre abdomen white, a line of feathers on each side between flanks and abdomen have outer webs black, inner webs white. Length 9 in.; bill .7 in.; wing 4 in.; tail 3.8 in.; tar. 1.2 in.

(This specimen may be declared a plesiotype.)

7/1/1912 ♂, Schuetzes Landing, Murray River, S.A. 1/10/1925 ♂, Murrayville, Vic., Both similar to 516, the normal width of band of color on rump being 1.7 in.

4323 ♂, Bow Hill, S.A. Like 516, but less bay color on rump, one inch only in width; wing 3.9 in.

13/12/1925 ♂, Polygonum Tanks, 20 miles south-west of Iron Knob, S.A. Like 516, but more color on rump to width of 2.5 in. and of lighter (chestnut) tone; scapulars have inner edge and a stripe next the shaft, tawny; wing 4.1 in.

Oct. 1898 ♂, Leigh's Creek (373 miles north of Adelaide). Like 516, but wing edges tinged tawny; flanks more olive brown.

B.5675 ♂, 18 miles N.W. of Kimba, S.A. (Details on label, spread of wing 33.25 c.m., weight, 79 grammes.) Like 516, but lighter color (chestnut) on rump and scapulars; wing edges lighter still (tawny).

14/4/1920 ♂, Karoonda, S.A. Like 516, but slightly darker with shaft streaks more diffused; long upper tail coverts have slight tips of black; the feathers of lower flanks black subterminal cross bars; wing 4.1 in.

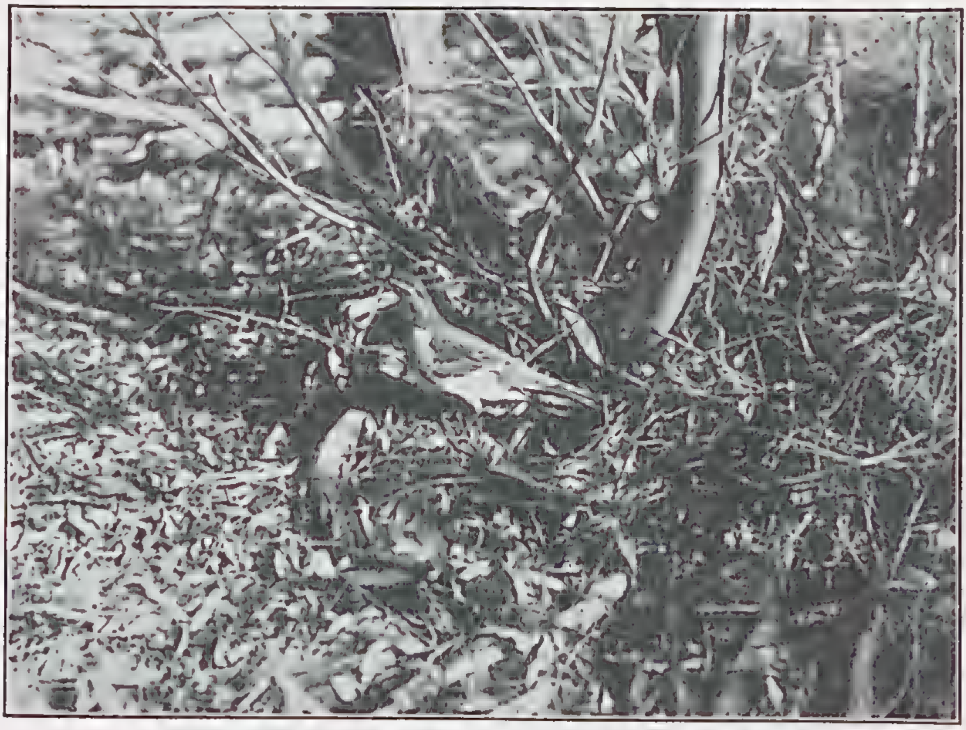
14/4/1920, ♀ Karoonda, S.A. 4/9/1912 ♀, Wingamin, Hooper, S.A. Both these females are without the prominent chestnut scapulars and rump, the color being confined to edgings on the latter part.

B.72 ♀, Oodla Wirra, S.A. (165 miles north of Adelaide). Upper surface richer (umber), brown than the above, also the flanks; rump edged chestnut.

12 8/1902 ♀, Donald's Plain, near Yardea, Gawler Ranges, S.A. A mature female, rump bay; scapulars tinged same color; breast grey running up the centre of the throat, which is mottled white on upper portion.

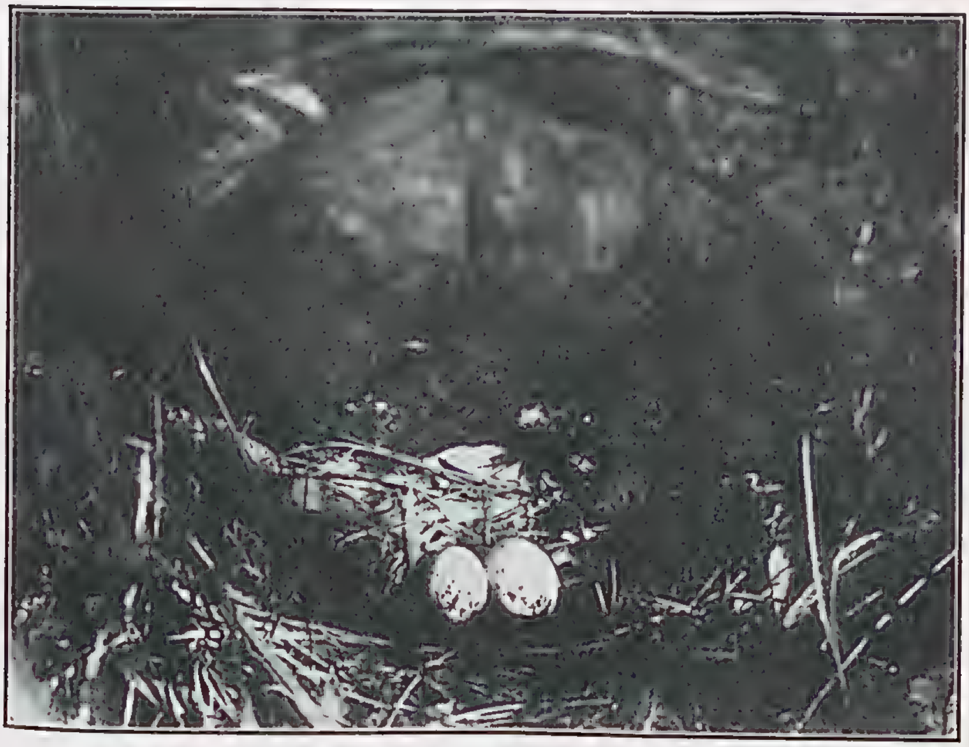
—— ♀, Polygonum Tanks, near Iron Knob, S.A. Like the previous specimen but rump lighter (chestnut) color, width of which is 1.7 in.; scapulars lighter and brighter still (burnt sienna); throat and breast clear cut mouse grey.

O.18077 ♂, Adelaide, S.A., 1864 (in Aus. Mus., Syd.). Crown darker than 516; color on rump 2 in. wide; wing 4.1 in.



CHESTNUT QUAIL-THRUSH NEAR NEST IN FALLEN BARK OF MALLEE EUCALYPT.

Photo. by A. H. Mattingley.



NEST OF SPOTTED QUAIL-THRUSH, TASMANIA.

Photo. by (Miss) J. A. Fletcher.

O.18075 ♂, Murray River, 1867. O.22939 ♂, South Australia, 1867. Both in Aus. Mus., Syd., and similar to 516 and typical.

A.9867 ♂, Mossgiel, Riverina, N.S.W., 1881 (in Aus. Mus., Syd.). Like 516, but a darker specimen.

R.9563 ♂, R.9564 ♀, Junction of Murray and Darling (pair in Nat. Mus. coll.) ♂, similar to 516, ♀ similar to the mature specimen from Donald's Plain; rump bay color, 1.5 in. in width; a little color on scapulars; breast and throat grey.

R.9573 ♂, immature, Murray River, S.A. (in Nat. Mus. coll.). Rump bay, width 1.5 in.; wing coverts dark brown tipped white; upper throat mottled whitish; throat and breast black mottled with grey; sides of breast grey; flanks plain tawny olive; under tail coverts with black centres.

18076, immature, Murray R., S.A., 1867 (in Aus. Mus., Syd.). Olive brown darker than mature birds; crown and mantle edged dusky; scapulars tinged tawny and boldly edged black; throat, breast and flanks heavily edged black.

R.9572, young, South Australia (in Nat. Mus., Melb.). Darker (mummy) brown; crown with dusky fringes; scapulars tawny edged black; throat with black fringes; breast and flanks heavily edged black. Length 7.8 in.; wing 3.9 in.

R.9571 ♀, immature, South Australia (in Nat. Mus. Melb.). Dark olive brown above with obscure darker centres; rump tinged chestnut; much grey on throat, *i.e.*, very little white flecking.

5586 ♂, young, Nhill, Vic. (This and four following skins are in H. L. White coll., Nat. Mus., Melb.). Like 516, but crown lighter, rump edged chestnut; wing coverts dark brown tipped whitish; throat white edged dusky; a few flank feathers with dusky fringes.

5583 ♂, Kow Plains, Mallee, Vic. 5584 ♂, 5585 ♂. These three skins are typical and similar to 516, width of color on rump being 1.5 to 1.7 in.

5587 ♀, Kow Plains, Vic. Similar to Karoonda female, rump only tinged chestnut; the grey of breast running well up the throat.

The following six skins loaned by Western Australian Museum.

7305 ♂, Lake Dundas, W.A. Upper surface darker olive brown than 516, and showing more prominent centres; scapulars and rump brighter chestnut and greater width of color, 2.5 in.; secondaries striped burnt sienna; wing 4.1 in.; tail 4 in.

8714 ♂, Lake Dundas, W.A. Like 7305, but a few feathers on chin flecked white, a few on breast edged grey, and three greater wing coverts edged brown, not black; wing 4 in.; color on rump 2.2 in. in width.

6317 ♂, Wongan Hills, W.A. Similar to 7305, mantle showing prominent darker streaks; color on rump 2.2 in.

6860 ♂, Cranbrook, W.A. Like 7305, but color on rump only 2 in. in width; scapulars tinged only; black marks on flanks small and irregular along shaft; under tail coverts brown tipped white, with subterminal mark of black.

6861 ♀, Gracefield, Cranbrook, W.A. Dark streaks more prominent on back than 6860; rump edged chestnut; wing coverts brown tipped light buff; chin white; throat and breast grey; flanks tawny olive; under tail coverts fuscous instead of black.

6303, nestling, Woryantilla, W.A. Back fringed black; scapulars tawny edged black; rump edged chestnut; under surface edged blackish, heavier on breast and flanks; wing 3.8 in.

23348 ♀, immature, Mongup, W.A. (in Aus. Mus., Syd.). Dark olive brown, a few feathers of crown and upper throat with dusky fringes; inner edges of inner secondaries and some scapulars tawny; outer edges primaries whitish running down from white patch near base.

23347, immature, Mongup, W.A. (in Aus. Mus., Syd.). Back light olive brown, some feathers edged dusky; rump tinged chestnut; throat white edged dusky; breast and flanks greyish heavily edged blackish; wing 3.7 in,

22936 ♀, Mongup, Salt River, W.A., 1869. Dark olive brown although edges of crown and back are lighter from abrasion; rump tinged chestnut; throat mottled with white; wing 3.9 in. (Aus. Mus., Syd.).

R.9566 ♂, R.9567 ♀. A pair from Western Australia, in Nat. Mus., Melb.. the male being typical of western race, the female not fully mature, there being no chestnut on the rump and more white mottling on the throat.

R.9568 ♂, R.9569 ♀, A pair from Gordon River, W.A., in Nat. Mus., Melb. Both well streaked on back; ♂ has very little color on scapulars; ♀ lighter olive brown, rump tinged only.

R.9565 ♀, Albany, W.A. (in Nat. Mus., Melb.). Similar to R.9567, upper surface showing dark centres, but no chestnut.

6595 ♀, Broome Hill, W.A. (in H. L. White coll.). Like 22936, but dark shaft streaks on crown as well as back; throat all grey, except chin.

* * * *

7/8/1902 ♂, Wipipippee, S.A. South end Lake Gardiner, 110 miles west of Port Augusta (lent by Dr. A. M. Morgan). Type, *C. c. clarum*, (*S.A. Ornithologist*, Vol. VIII., p. 138). Crown, back of neck and central tail feathers olive brown; back rump and upper coverts plain burnt sienna; inner secondaries edged tawny; wing coverts with large spots of white; throat and breast black; sides of breast grey; flanks olive brown; under tail coverts black, edged white. Length 9 in.; bill .7in.; wing 4 in.; tail 4 in.; tar. 1.2 in. (For Figure, see plate I.).

9129 ♀, Deering Creek, Central Australia, No. 69, Horn Expedition, 1896 (in Aus. Mus., Syd.).* Resembles previous specimen, but crown and upper mantle olive brown; scapulars, mantle, rump and coverts rich burnt sienna; some longer tail coverts olive brown, like tail; chin whitish; throat and breast grey; under tail coverts fuscous largely edged white; wing 3.9 in.

R.9574 ♂, immature, Ooldea, S.A., 23/1/1909 (in Nat. Mus., Melb.). Crown, nape, centre tail feathers and a few coverts olive brown; back, rump and scapulars burnt sienna, width 3 in. secondaries edged and ear coverts tinged same color; wing coverts dark brown tipped buff; primary coverts dark brown tipped white; throat whitish; breast and lower throat grey; on lower breast a few dusky fringes; flanks tawny olive with a few dusky fringes. Length 8.5 in.; wing 3.8 in.; tarsus 1.1 in.

REMARKS.

From the localities noted on these specimens this species appears to be a denizen of the mallee scrubs. The "belts of the Murray," John Gould's original hunting ground, represents adjacent portions of South Australia, Victoria and N.S. Wales, an area of about 48,000 square miles, but much of it has now been levelled for wheat farming. Mallee-like country again occurs in south-western Australia. Probably an area of about 35,000 square miles lying within the belt of rainfall from 10 to 20 inches. It is remarkable that skins from Albany, Gordon River and Salt River, W.A., differ so little from those of the type locality, 1,500 miles away. If they differ at all, it is in the streaking of the back being more noticeable, and the color on the rump being of greater width. Here is a good illustration of what is known as broken distribution, and several parallel examples are to be found among other passerine birds. Whether the species is found in those great tracts of scrub known to lie across Australia, about the 30° latitude, around the northern side of the Nullarbor Plain, is not yet proven, for no collections have been made therein.

Small individual differences are not many. These consist of slight variation in width of the band of color on the rump, and in the tone of the color from bay to chestnut. The normal width of the band on the male bird is 1.7 in. In several West Australian skins,

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*In *Nests and Eggs*, Vol. I., p. 331, A. J. North refers to this particular specimen as being a female of *C. castaneothorax*. He formerly believed it to be an abnormally plumaged young male of *C. castanotum*. (See Rep. Horn Exp., Pt. II., Zoology, p. 90). This error led to another in the editorial note *Emu*, Vol. XXV., p. 152.

however, the color is over two inches in width, in one, 7305, reaching 2.5 in., connecting with the chestnut color of the scapulars, thereby giving a great expanse of color. In skin 6860, however, the scapulars are not well-colored and a greater expanse of brown back results. There is a little feature appearing in Leigh's Creek skin and in some from W.A., namely, a tawny edging to longer scapulars that may be a remnant of earlier characters, since this is a common feature in *C. punctatum*. Two specimens have slight dark marks on upper tail coverts, and on some feathers of the flank, both appearing to be individual variation.

Female birds have noticeably less color on the rump than males; many of them in the south-eastern part of Australia, even when nesting, are merely tinged with chestnut. Young birds, probably yearlings, have none at all.

The band on the mature female, however, reaches 1.5 in. in width, with little color on the scapulars. The female may always be distinguished by the expansively grey breast, which color runs well up the centre of the throat to the chin, which is mottled white. The only mature female obtained in the eastern mallee is 9564, from the junction of the Murray and Darling Rivers.

Little is known of the several stages of the young male, although it bears some resemblance to the female. See skin 5586, with whitish throat and brown wing coverts. Specimen 9573 shows that while the wing coverts remain brownish and the flanks plain, the grey feathers on the breast and lower throat are giving place to black. (See also 8714).

Young birds are always interesting. The dusky fringes on crown and scapulars and more heavily on breast and flanks suggest a distant relationship to the crescentic markings of the old world genus *Geocichla* (Ground-Thrushes).

A pair of birds from Polygonum Tanks, 20 miles south-west of Iron Knob, Eyre Peninsula, S.A., raises a new proposition. The male has an extra width of color on the rump, reaching 2½ inches, while the female is several tones lighter and brighter than typical specimens. These are the most marked variations of the species and lead towards skin 9574, Ooldea, where a distinct variation both in color pattern and in tone is noted.

In the distinctive skin from Wipipippee, S.A., named by Dr. Morgan *C. c. clarum*, the same bright burnt sienna color occupies the whole region of the back as well as the rump, for a total width of 4 inches. Of equal importance is the historic skin taken by the Horn Expedition in Central Australia (1896), which, although a female, is actually the brightest of all these specimens. We consider that this new sub-species has all the characters of a full species.

3. *Cinclosoma alisteri.*

(Nullarbor Quail-Thrush.)

First described by G. M. Mathews, from Waddilinia, Nullarbor Plain, Western Australia. Figures, Campbell, *Emu*, Vol. XXI., pl.

32; Mathews, *Birds of Australia,* Vol. IX., pl. 427. Types, ♂ in G. M. Mathews' coll., England; ♀ in H. L. White coll., National Museum, Melbourne.

Examination of Skins.—5574 ♂, Naretha, W.A. (figured in *Emu,* XXI., pl. 32). Upper surface entirely russet; wings edged fuscous; cheek patch white; throat and breast black; sides of breast darker chestnut; abdomen white; flanks tinged russet with few lanceolate black marks. Length 7.4 in.; bill .6 in.; wing 3.3 in.; tail 3 in.; tar. 1 in.

5573 ♀, Naretha ,W.A. (type female). Crown and ear coverts drab; back scapulars and centre tail coverts russet; centre of throat and all breast mouse grey; outer web of secondary coverts russet.

5579 ♂, Nullabor Plain, W.A. 5577 ♂, Haig, W.A. 5578 ♂, Haig, W.A. All similar to 5574, the last mentioned soil stained beneath.

5576 ♂, Loongana, W.A. Much lighter cinnamon tone about crown and scapulars; centre tail feathers abraided. 8220

O.26582 ♀, Ooldea, S.A. (lent by Aus. Mus., Syd.). Similar to 8820; wing 3.2 in.

8820 ♀, Naretha, W.A. (figured in *Emu,* XXI., pl. 32). Like 5573, but darker; crown and back olive brown tinged russet, most feathers with darker centres; scapulars and edges secondaries tawny; flanks wood brown.

5582 ♀, immature, Haig, W.A. Dull russet above, tinged with brown; lighter brighter tawny on scapulars and rump. A few brighter tawny feathers in crown; scapulars fringed black; throat whitish, breast grey, both heavily edged black; flanks dull tawny fringed blackish; under tail coverts tawny olive and white.

5575, immature, Naretha, W.A. Back clear russet like rump; all crown and scapulars tawny edged black; under surface whitish edged dusky; flanks and across breast tinged tawny.

—— ♂, young, Ooldea (Aus. Mus., Syd.). Back russet; crown with lighter centres and edged dusky; scapulars edged black; breast greyish, boldly edged black.

(Except otherwise indicated, all these specimens in H. L. White coll.)

REMARKS.

The remarkable thing about this species is its association with the Nullarbor Plain, an area of about 45,000 sq. miles, one of the largest plains in the world, across which the east-west railway runs in a straight line for 330 miles. It thus occupies a geographical position between the two branches of *C. castanotum* which are found, one in the mallee of south-eastern Australia, and the other in south-western Australia. Naretha lies on the western side of the plain, 200 miles from Kalgoorlie, W.A. Haig is 75 miles further eastward and Ooldea which provides two authentic specimens is 450 miles from Naretha and the most easterly record for the species. There are no marked differences in specimens from the various localities, only such as may be accounted for by newly moulted and bright plumage. The specific characters are :—(*a*) Small size and dark coloration. (*b*) Upper surface entirely plain, russet. (*c*) Brow stripe not continued before the eye; lores entirely black. (*d*) White cheek stripes not reaching the gape. (*e*) Deep chestnut patch on each side of breast.

The female, as is the case with other species, exhibits traces of brown coloration above, by having crown and back tinged drab, while the centre of throat and breast is grey. Skin 8220 shows distinct olive brown upon the back, with obscure streaking.

The species is at once distinguished from other " tawny " species by the full black throat and breast. It appears, therefore, to be related to *C. castanotum*, as an off-shoot on the tertiary iron-stained plains that are a prominent geographical feature of Australia between 30° south latitute and the head of the Great Bight.

4. *Cinclosoma cinnamoneum.*

(Cinnamon Quail-Thrush).

First described by John Gould from a bird obtained by the explorer, Chas. Sturt near the Depot, lat. 29° 40′, north-western corner of New South Wales. June 9th 1845. Figures. Gould, *Birds of Australia*, Vol., IV., pl. 6. Mathews, *Birds of Australia*, Vol. IX., pl. 425. Type ♂, in British Museum.

The following twelve specimens were lent by the South Australian Museum.

Examination of Skins.—B.3049 ♂, Hergott Springs, S.A. Crown hair brown; remainder of upper surface dark cinnamon; the mantle with faintly darker shaft lines; ear coverts cinnamon; upper breast tawny at sides, but white at centre; below which a is black band on lower breast; flanks tawny; abdomen white; a line of black spots down each side. Length 8.5 in., bill .65 in.; wing 3.5 in.; tail 3.3 in.; tar. 1.1 in.

B.4416 ♂, Stuart's Range, S.A. Similar to B.3049 except that three or four secondaries show dark brown, the remainder same colour as the back.

B.4434 ♂, Stuart's Range, S.A. Like B.3049, but a few black feathers on centre of breast run from breast band to throat, two or three of these have a white spot near tip.

—— ♂, Mt. Burrell, C.A., 1891 (lat. 24° 30′). Like B.3049, but a few cinnamon feathers run laterally across the white part of breast.

2950 ♂, Leigh's Creek, (now Copley) S.A. Like B.3049, but dark shaft lines more prominent on mantle; five or six inner secondaries have fuscous centres; wing 3.6. in.

—— ♂, Leigh's Creek, S.A. 15/8/1912. Like 2950, but mantle more tinged with drab; ear coverts drab.

B.4263 ♂, Lookout Dam, Mt. Eba. Like B.3049, but more cinnamon on sides of breast; wing 3.4. in.

B.2259 ♂, Murteree, Strezleckie Creek. Paler than B.3049, a light cinnamon tone; crown drab; many black feathers in centre of breast, some half black, half white.

—— ♂, immature Mt. Burrell, C.A. 1891. Like B.3049, but ear coverts hair brown; upper throat whitish flecked with black; lower throat black; all the breast drab with tinge of cinnamon; wing coverts dark brown tipped buff.

B.2261 ♀, Murteree, Strezleckie Creek. Crown drab with darker centres; ear coverts drab; back cinnamon with tinge of drab and dark shaft streaks; rump plain brighter cinnamon; greater wing coverts mainly buff; wing coverts dark brown (fuscous) tipped whitish; centre of throat and all breast light (greyish) drab; flanks light cinnamon; under tail coverts tawny olive edged white; Length 7.6 in; wing 3.4 in.

B.2260 ♂, nestling, N.W. of Mirramitta, S.A. Lighter cinnamon above than B.3049; back same tone as breast; crown tinged drab and with blackish fringes; under surface with dusky fringes (throat damaged).

B.4417 ♀, immature, Stuart's Range. Like B.2261, but a few feathers of crown tawny with dusky fringes; back cinnamon; scapulars with black fringes; cheek stripes buff; throat and breast buff with dusky fringes; flanks cinnamon with dusky fringes.

7726 ♂, 7727 ♂, Mood's Creek, S.A. Both similar to B.3049 and typical (H. L. White coll.)

5588 ♂, 30 miles west of Oodnadatta S.A. Similar to B.3049. (H. L. White coll.)

5589 ♀, 30 miles west of Oodnadatta tablelands. (H. L. White coll.). Above dark cinnamon, much brighter than B.2261; cheek stripes buff or stained; upper throat whitish; breast smoke grey; flanks cinnamon. Length 8 in.; wing 3.5 in.

7728 ♀, Horseshoe Bend, Finke River C.A., (H. L. White coll.). Crown and nape hair brown, darker than B.2261; secondary coverts all edged tawny; throat whitish a few feathers on centre flecked grey; breast smoke grey; wing 3.4 in.

9130 ♂, Hughes' Waterhole, C.A. (taken Horn Expedition). 26123 ♂, McDouall Peak, Mt. Eba, (formalin specimen). Both similar to B.3049, and 7726 (these two skins lent by Aus. Mus. Syd.)

R.8311 ♂, Mungeranie, Lake Eyre (in Nat. Mus. Melb.). Plumage dark like B.4263. Length 7.6 in.; wing 3.5 in.

The following three are in Nat. Mus. coll. mounted :—

56943 ♂, Blood's Creek, Crown Point (taken Horn Expedition, 1896). Similar to 2950; wing 3.6 in. 28444 ♂, Cen. Aust. (Cockerell coll.) Similar to 2950 with noticeable shaft streaks on mantle. 28445 ♀, immature, Cen. Aust. Brown tinged tawny and edged dusky, also some scapulars; wing coverts dark brown tipped light buff; secondary coverts tawny, with black near tip; throat whitish edged dusky; breast drab, flanks tawny, both edged blackish.

(The following two skins taken near type locality, are in the collection of Dr. Wm. MacGillivray, Broken Hill).

—— ♂, Mt. Arrowsmith, Pimbarra Ranges, N.S.W., 2/10/12; like 7726 except for larger black marks on flank feathers; outer webs under tail coverts more fuscous than black.,

—— ♀, Naryileo Station, S.W. Q'ld. 6/2/17; like 5589, but throat as well as breast with tinge of buff; primary coverts tipped buff.

REMARKS.

The proposition may here be set down that *C. cinnamoneum* is a distinct desert species, one of the few regular inhabitants of that great central basin of Australia—the Eyrean sub-region—of over 150,000 square miles and where the mean rainfall is below 7 inches per annum. All the localities named lie within the rough circle of this " dead heart," and probably represent only the better portions, or oases, among the stony gibber tablelands and the endless sand ridges.

That the plumage is adapted to the prevailing " tawny " tone of the desert can be seen at a glance. Traces of former colours of plumage, however, remain in the hair brown of the crown, while in specimen 2950 more abundant darker shaft lines than usual appear. Ear coverts are, as a rule, cinnamon colored like the back, but some are brown, like the crown. This may be the last sign of immaturity, as is the drab tinge, on the back of the second Leigh's Creek male specimen. Skin B.2259 is unusually light in tone.

The most interesting individual variations are found on the light-colored breast band, which separates the black throat from the narrow black band on the lower breast. A skin from Mt. Burrell has the centre of the breast (usually white) toned with cinnamon feathers, while other skins, B.4434, and B.2259, show black feathers running up from the lower breast-band toward the black throat.

The female is distinguished from the male by the entire absence of black from the under surface, the breast being expansively light drab and the throat often mottled with white. Skins B.2261, and 7728, show centre of throat distinctly grey in contrast to the white cheek stripes, although other specimens are more whitish than grey. All the greater wing coverts are edged tawny which in the male are black, or mainly so. The immature male resembles the female for some time (see Mt. Burrell specimen).

In the earliest stages of plumages the feathers are invariably fringed with blackish crescents particularly on the under surface (see B.4417 and B.2260). As in other *Cinclosoma*, the tail is mainly black largely tipped with white, but in this and other " desert " species the centre tail feathers are tawny like the back, thereby hiding, what in flight is a prominent field, or identification mark.

Dr. MacGillivary's male specimen comes from a locality in north-western corner of N.S.Wales about 80 miles south of the type locality. The female skin comes from the south-western corner of Queensland about 80 miles north of the type locality. Both are important as showing the eastern limits of the habitat. The tinge of buff on throat and breast of the female as well as the buff tips to primary coverts are probably the last signs of immaturity.

C. cinnamoneum is one of the three species, having a double breast band. Being the oldest known of these species it has been placed by Mathews in *Birds of Australia* Vol. IX. p. 196 as the dominant species with *castaneothorax* amd *marginatum* as subspecies. Further material now appears to warrant the separation as three full species. No two are found in any one locality, and each has a well defined habitat.

C. cinnamoneum is the desert species from *castaneothorax* and it stands distinct by its smaller size, shorter tail, and discontinuous color of upper breast band. The black marks on the flanks are reduced to mere spots, which, however, occupy portion of the outer web of the feather, as noted in *castaneothorax*. The wing is differently marked, for the scapulars are all cinnamon in tone ; three or four of the inner secondary coverts are also cinnamon, not black or brown as in other species.

5. *Cinclosoma castaneothorax.*

(Chestnut-breasted Quail-Thrush).

First described by John Gould from a " tableland to the northward of the Darling Downs." Proc. Zool. Soc. Lond., 1848, p. 139, pl. 6 ; also in *Birds of Australia*, Suppl. pl. 32. Types, ♂, in British Museum; ♀, in collection of Dr. W. MacGillivray, Broken Hill, N.S.W.

? type loc.

Examination of Skins.—4/9/1925, ♂, (topotype), Barcarolle, Thomson River, Qld. (lent by F. L. Berney). Crown, nape and ear coverts hair brown ; mantle hair brown streaked fuscous ; rump russet ; upper tail coverts and centre tail feathers fuscous ; breast band hazel, followed by black band beneath ; flanks cinnamon fringed lighter, abdomen white, some feathers down each side with outer web black ; under tail coverts brown at base and on outer edge ; inner edge and tip largely white, remnant of black mark near tip. Length 9.5 in. ; bill .7 in. ; wing 4 in. ; tail 4 in. ; tar. 1.2 in.

27/8/1923 ♀, Adavale-Charleville Rd., Qld., type female, lent by Dr. MacGillivray. Crown and back hair brown, the latter with fuscous central streaks; scapulars and rump russet streaked darker; upper tail coverts and centre tail feathers hair brown; throat buff; breast drab; flanks cinnamon brown fringed lighter; centre of abdomen white; under tail coverts mainly white. Length 8.7 in.; bill .65 in.; wing 3.8 in.; tail 3.7 in.; tarsus 1.1 in.

REMARKS.

These two rarities were taken in central Queensland, the localities lying about 220 miles apart. The characters are very distinct and should be admitted specific in spite of the scarcity of specimens. The male has the brows buff in contrast with the white cheek stripes; dark streakings well developed on its brown back; upper tail coverts are the same tone as the back, but the rump is rich russet. The breast band is almost as bright as the rump, and below it is a partial black band which curves to either side and joins a line of black streaks running down each flank. Under tail coverts are largely white. The female differs in the usual characters, which apply to the whole genus, there being an entire absence of black markings on the under surface. Further, the rump is not plain russet but shows streaking like the back; and the throat is expansively buff.

Referring to Gould's plate in *Birds of Australia*, where the male is figured in two positions the upper figure may be considered the better representation of the colors, with this remark—that the line of black feathers down the flank has been omitted. The female was unknown until this specimen was procured by Dr. MacGillivray in 1923. It would appear that this species once had a larger habitat in Queensland but has probably been cleaned out by the march of pastoral settlement.

The nearest species in appearance to *C. castaneothorax* is *C. marginatum* of Western Australia, but reasons are given under the latter species for considering them separate. A very interesting point arises in connection with the streaks upon the flanks. In the Barcarolle skin the black occupies the outside web of the feather, but in all specimens of *marginatum* examined, the black is on the inner web. If this peculiarity holds good, it constitutes another, though small, specific difference.

6. *Cinclosoma marginatum.*

(Western Quail-Thrush).

This was described by Sharpe *Cat. Birds Brit. Mus.* Vol. VII., p. 336 (1883), from specimens received from North-western Australia, Elsey Expedition.* Figure, Mathews *Birds of Australia*, Vol. IX., pl. 426. Types, ♂, and ♀, in British Museum.

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*Mathews states in *Check-list of Australian Birds*, p. 142; "(not Elsey's birds), exact locality unknown. Now designated North-western New South Wales." We regret we cannot follow Mr. Mathews in this "geographical license," as we have examined a specimen (B.4225, in the S.A. Museum) taken inland from Carnarvon, which locality is on the border of Near North-western Australia——AUTHORS.

Examination of Skins.—1526 ♂, Lake Way Rd., (in W.A. Mus.). Crown hair brown; back russet, faintly shaft-streaked, and with some lighter (abraided) feathers; rump and centre tail feathers plain russet; brows and cheeks stripes white; ear coverts russet; breast band and flanks cinnamon, below which, a black band connected on each side with line of black streaks down the flanks; centre of abdomen white; under tail coverts black edged white. Length 9 in. bill .65 in.; wing 3.7 in.; tail 3.7 in.; tar. 1.1 in.

1528 ♀, 21 miles E. of Lake Darlot (W.A. Mus.) Crown and nape hair brown, ear coverts darker (fuscous); back russet tinged brown with dark shaft streaks; rump russet faintly streaked; brows and throat including sides of throat buff; breast smoke grey; remainder of under surface mainly cinnamon, with lighter fringes; centre of abdomen white; under tail coverts fuscous, tipped white, but with subterminal mark of black; wing and tail both 3.8 in.

5810 ♂, Day Dawn (W.A. Mus.). Like 1526, but smaller; wing 3.6 in. bill .6 in.

B.4225 ♀, near Carnarvon, W.A. (S.A. Mus.). Like 1528, though smaller; wing 3.5 in.

—— ♂, Black Range, Murchison, W.A. (S.A. Mus.) Like 1526, but slightly darker and with ear coverts hair brown; breast band tawny well connected around sides of breast to flanks.

28145 ♀, Wiluna, W.A. (Aus. Mus. Syd.). Darker russet than 1528; back showing darker streaks; sides of black and flanks tawny; some wing coverts black tipped white, greater series edged tawny and tipped white.

5580 ♂, Lake Way, (H. L. White coll.). Like 1526, but darker, breast band tawny .6 in. wide; wing and tail each 3.8 in.,

5581 ♀, Lake Way, (H. L. White coll). Like 1528; mantle tinged brown and with darker streaks, but less grey on breast; wing 3.7 in.

REMARKS.

Male specimens in the several Museums named, all taken in Western Australia, one as far up as Carnarvon,* are very similar. No. 1526 is the lightest in tone, but this appears to be largely due to abrasion of the feathers, while 5810 is smaller in size. The cinnamon breast band (about .6 inch in width) is a lighter tone than the back, and always forms an unbroken connection around the sides of the breast, to the flanks. The clean-cut brown crown, in the nature of a cap, and the curious horse-shoe black splash on the breast, broad across the top, but running down each side in a line of black feathers, all help to distinguish the species. The plain russet tone of the back undoubtedly results from the arid ironstained country which the species inhabits.

The female differs from the male by having more streaking on the back, although rump and centre tail feathers remain almost plain. The throat is a clean-cut buff, absorbing the generic light cheek stripes usually so noticeable in females of other species, where the centre of the throat is greyish. The remainder of the under surface is expansively cinnamon in tone, with only the centre of abdomen white. Usually the feathers of the flanks are fringed with a lighter tint, as if losing their color.

The type description states that this species resembles *C. castaneothorax*, but is distinguished by the under tail coverts being black margined with white, and having the abdomen separated from flanks by a line of black feathers. These characters hold good, but to them

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*The species referred to in *Rep. Calvert Expl. Exp., Trans. Roy. Soc. S.A.*, Vol. XXII., p. 180 as *C. cinnamoneum* is probably *C. marginatum.*

may be added, crown brown (a clean-cut cap); back russet, not streaked.

The female of this species differs from that of *castaneothorax* in having upper tail coverts and centre tail feathers plain russet, not hair brown, the mantle only being streaked, not the whole back; while under tail coverts have an irregular mark of black near tip. It is obvious that close relationship exists between *marginatum* and *castaneothorax*, but it is to be noted that the former ranges through central Western Australia, probably over an area of 500,000 square miles, and that the nearest record of *castaneothorax* is 1,500 miles away to the east. It may be expected that divided by such an immense distance some consistent differences would appear. The points enumerated make for specific rank and specific characters in other members of the genus are found to be constant.

NOTE. The only member of the genus occurring outside of Australia is *C. ajax*, which is found in south-eastern Papua. It is as large as *C. punctatum*, but of different colour pattern. Figure: Gould's *Birds of New Guinea*, Vol. III., pl. 10. Male—" Dark olive brown; lores, around eye and ear coverts black; patch on cheek white; throat and breast black; wing coverts black; flanks orange rufous." Female—" Wing coverts dark brown, some tipped white; brows and behind eye white; throat white; breast and flanks more chestnut-coloured."

In the Haunts of the Heron.

BY M. S. R. SHARLAND, R.A.O.U., Hobart.

FILLED with interest and a certain amount of excitement were the days I spent with the White-faced Heron* in Southern Tasmania in the spring of 1925, studying their nesting habits and making photographic records of adults and young. For all I know, the White-faced Heron may have been photographed by many bird-photographers. Although wary to a degree, and with remarkable powers of vision, the bird is fairly common throughout Australia, and with the exercise of a little care is not extremely difficult of approach. Therefore, my pictures may not be regarded as an achievement, although they occupied days in the taking; but because of the interest and, for me, a certain fascination attaching to water birds—and the Heron in particular—I have been induced to record the methods employed to get the pictures, as well as the results of observation made at close quarters, largely from a " hide."

Because of its size there are few Tasmanian birds more conspicuous or more easily recognised, either on the wing or at rest, than this sombre fisher, the " Blue Crane "—to give the bird its bush name. It is pretty sure to be seen about the edge of any swamp or marsh; but the bird does not confine itself to those places, for on plains far removed from water it often takes up its abode. It is a shy creature and has no confidence in man. It does not seem to be molested in the country, except by visitors from the cities, among whom are

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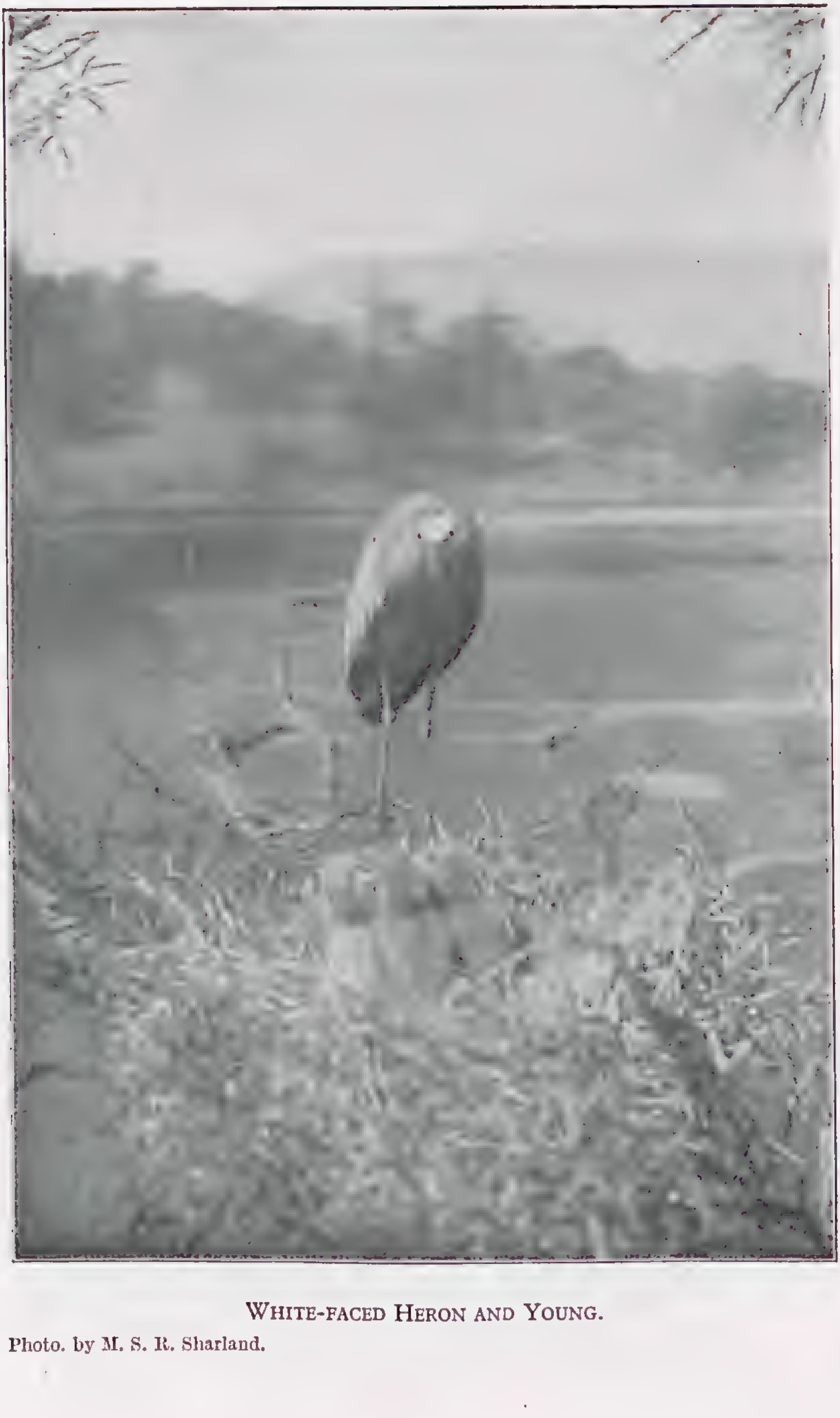
**Notophoyx novæ-hollandiæ.*

NATIONAL MUSEUM MELBOURNE



WHITE-FACED HERON AND YOUNG.

Photo. by M. S. R. Sharland.

frequently those who shoot at anything wild, but the bird usually takes care that neither they nor anyone else gets close to it. Unless taken by surprise, it is off when they appear in sight, slowly, and with what seems a lazy flapping of wings, making its way to safer quarters. Seldom does it go far—just sufficient to be out of range, but in view of its supposed enemies. On tidal mud flats, in shallow bays, or on the shores of estuaries the birds often feed together in large flocks, even right through the breeding season, but when away from water they move about alone or in pairs. Frogs, beetles, fresh-water snails, and a variety of water-loving insects are all acceptable food.

It had long been my desire to study the White-faced Heron at close quarters, and it occurred to me early in the season that I might be able to locate nests of the bird in the vicinity of the mouth of Duck-Hole Creek, between Richmond and Cambridge, where there are attractive mud flats and tidal marshes holding many varieties of water birds, and where migratory waders feed during the entire period of their Tasmanian visit. Sure enough, one day early in October saw me climbing to a nest in a eucalyptus tree overhanging the water. It was more than twenty feet above the ground and in a tree which, because of its small proportions, I would never have dreamt held such a nest. Only observation of the bird flying up to the tree caused me to examine it. The nest was a bulky structure of stout sticks that had evidently been added to for at least two previous seasons, and contained three greenish eggs, well incubated. It might be interesting to mention here that I have within about twelve months inspected well over a dozen nests of the White-faced Heron in the south of Tasmania and at no time have I found more than three eggs to a clutch ; and this is confirmed by a fellow-observer ; yet according to ornithological literature, four to five eggs constitute the average clutch. As the nest under review was rendered accessible by means of the strong branches about which it was constructed, and the setting was admirable, I decided that it was just suited to photographic operations and long-looked-for observation. Accordingly, the next day I took the hiding tent to the site and placed it on the ground about twenty yards from the base of the tree, with an uninterrupted view of the nest and the water in the background. Leaving it in a semi-erected state, I waited a few days until the eggs had hatched and three young birds, clothed in greyish down and unable to hold their heads up, appeared in the nest. Meanwhile, I had by degrees erected a small but substantial staging in the branches of the tree within four feet of the nest, where one of the cameras was to be located, a second stand camera together with a cinematograph outfit being operated from the " hide."

The hiding tent, which was to be my quarters for several hours three or four days a week, was erected in its proper position on October 28 and secreted with branches to make it appear as natural as possible, while a little quarter-plate camera was exchanged for a dummy camera on the staging in the tree. Then, running a length of thread from the shutter of this camera to the tent and preparing the others, I fastened myself in and waited.

Nothing happened for quite a long while. Having chosen for the site of the " hide " the edge of a bank a few yards from high-water mark, I was afforded a splendid view over the wide expanse of river flat, as well as along the shore for some distance on each side, and through my " peep-holes " could see practically all that was going on. It was very fascinating watching birds feeding close by, especially when they were totally ignorant of my presence—Chestnut Teal by the dozen were continually sweeping up and down the quiet waterways, quacking at intervals in their noisy way; flocks of Stints and Golden Plovers fed on the mud as the tide receded, retiring to a small island when the flats were covered; Oyster-Catchers frequented a little sand-spit on the opposite shore, and many Curlews flew into the mouth of the river at times, alighting a few yards away from the " hide," while a stately Pelican was constantly on the flats. The many hours that I spent in that tent during the weeks that followed would have been inconceivably dull had it not been for the wonderful variety of bird life around me. When I grew tired of watching the Herons in the nest or the birds on the flats, I gave my attention on the other side of the tent to a pair of White-backed Magpies feeding a young bird in a nest which had been blown from a tree into a small bush a few feet from the ground, or to a nest full of hungry Miners in a sapling close by. There was ample to occupy my mind and cause me to forget the pains that came through sitting in a cramped position for hours at a time.

Presently, a Heron detached itself from a flock of birds on the mud flats about a quarter of a mile away, and flying across in my direction, alighted about fifty yards out on the edge of low water. For a quarter of an hour she stayed there having a good look round; then she rose, and flying round once or twice over the tree, uttered a croak, which caused the young birds to elevate their heads, and then alighted alongside the nest. The little birds were hungry and maintained a peculiar whining cry; but the old bird sat like a grey statue, as if she suspected that the hiding tent held something less innocent than appeared from the exterior—in which, of course, she was not far wrong. She was very nervous, and after feeding the young, she moved about on and off the nest, straining her neck in trying to perceive what was under the covering of canvas and leaves; her black eye against the white face was most conspicuous. When she was in what I considered a suitable position, I released the shutter of the camera in the tree without causing her any alarm—in fact, she completely ignored both the dummy and the camera in the tree from the day I commenced operations, but she constantly held the " hide " in the deepest suspicion. This I attributed to her keen vision in perceiving me enter it, because for the first week I was unable to get assistance in the direction of fastening me down and allowing the bird to think that with the disappearance of a companion I had gone also. I spent two and a half hours in the " hide " that day, and was able to make one or two exposures from my peep-hole with a long range lens; but the bird returned to the nest only on the one occasion.

It was a beautiful day when I went into the " hide " for the second time, and I was fortunate in having to wait only ten minutes for the

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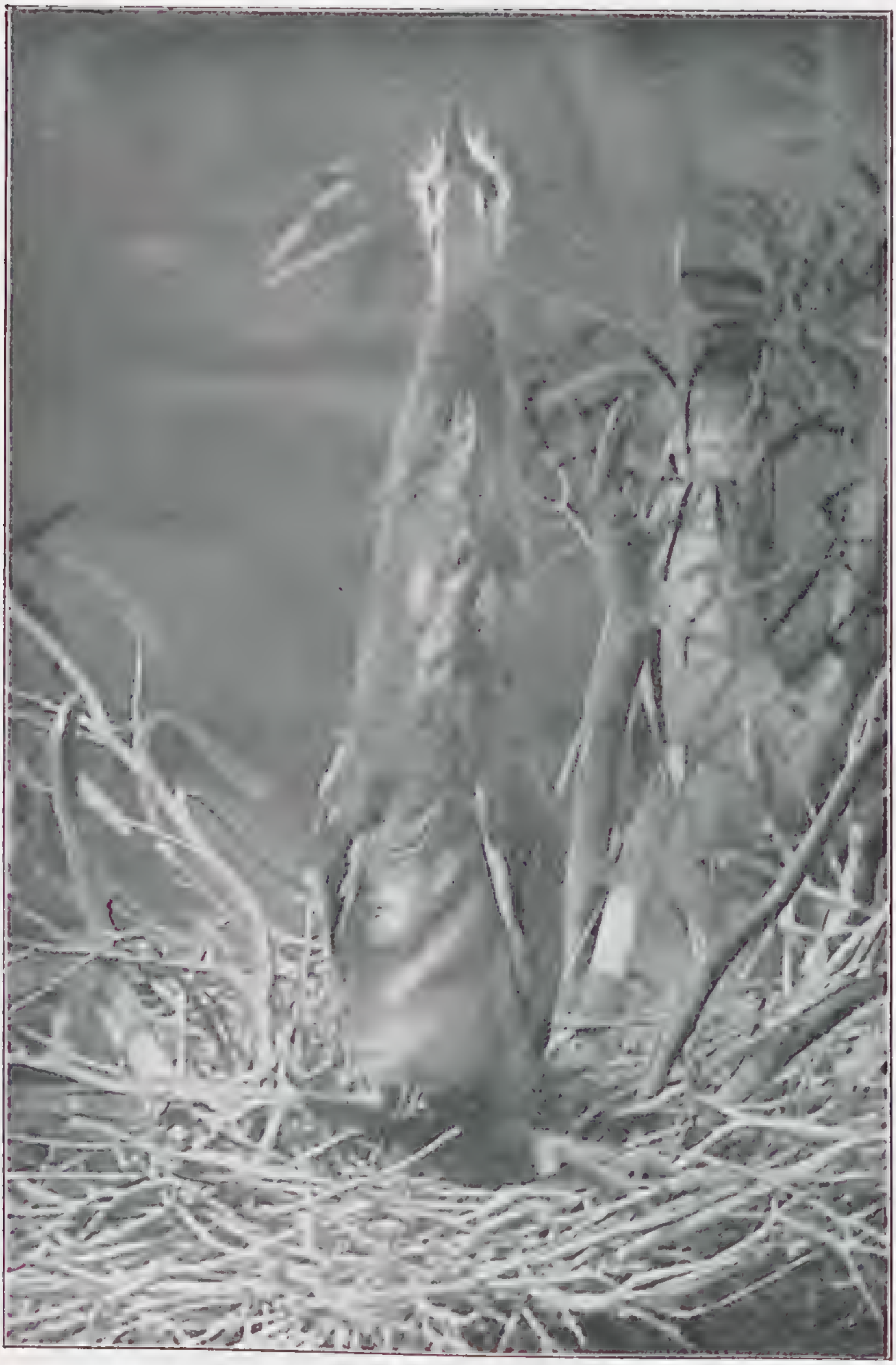


CHARACTERISTIC ATTITUDE OF YOUNG HERON IN NEST.

Photo. by M. S. R. Sharland.

bird to return. As on the first occasion, she uttered a loud croak before alighting at the nest. The three young, which were growing rapidly, were fed with regurgitated food, the nature of which I could not at that time determine. As soon as she landed on the branch close to the nest, the young ones, which had been anxiously awaiting her coming, lifted their heads, and gripping her bill with their own, shook it vigorously, till with a movement of the throat the parent brought up the partially digested matter on which the offspring feed. For some weeks they lived on this food, and I noticed that when they were ready to feed, loose skin on either side of the sharp bill was extended several inches wider than the actual bill so as to form a larger receptacle for the parents' convenience. During the whole time I had them under observation they were fed with regurgitated food ; not once did the parent disgorge till agitated by the bill-shaking process. And on one occasion, when I was at the nest making a cinema film of the young family, one of them, frightened at my presence, gave up a quantity of food a few minutes after the visit of the parent ; I saw then that it was composed of marine worms, shrimps, pieces of crab and water insects found on tidal flats.

From then on to the end of November I spent many hours with the Herons, and incidentally found two more nests among some she-oaks on the opposite shore, each containing three young ; the peculiar cries of the young birds, which may be heard for about forty yards, gave their presence away. The family in the tree by the " hide " had by this time dwindled to two, one of the too-venturesome youngsters having fallen over the edge of the nest. They were almost fully grown. The parent bird, which on this occasion, judging by its fine plumes, was the male, returned in about an hour after I had shut myself up in the " hide," but as soon as he fed the young he left, and the overcast sky did not favour photography.

I watched this Heron and his mate fishing in the shallow water a little distance out, and could not help noting the rapidity with which they used their bills when anything edible came their way. It was a lightning-like dart that little could escape. I have noticed them using their bills to advantage in captivity when catching flies crawling over their food or round their water tin. A steady aim is taken from a distance of about twelve inches and the bill is jerked out and back (with the fly) too rapidly for the human eye to follow. Judging by ornithological literature our Heron differs in its feeding habits from the Heron of Europe, because it wades about the shallows searching for food, whereas the Heron of the Old World is said to wait motionless in suitable places for its food to float or swim by. The Herons under notice sometimes made an excursion to a water hole in a paddock a little distance from the salt water, where they evidently secured frogs, for these creatures are included in their bill of fare.

Upon emerging from my hiding-place for the last time and climbing the tree to get the camera, one of the adult Herons came from the flats and hovered about me, croaking harshly, eventually coming to rest on the top of a dead tree about thirty yards off. It was the first time they had shown any signs of making the least pretence of defending their offspring ; indeed, my appearance usually was the signal for a hurried exit by them and all other Herons from the neighbourhood. A half-submerged islet out in the bay was the favourite vantage-point.

The young birds were almost ready to leave the nest. Their plumage was for the greater part of a light blue-grey like that of the adults, but their breasts and necks were touched with rufous (a colour which they later lose), and the beaks and legs were yellow. Instead of pecking at my hand, as might have been supposed, when I went to the nest, one young bird with a well-developed bill went straight for my eyes, and could it have reached them it would have undoubtedly done serious injury. I found that this knowledge of the most vulnerable part of its enemy was possessed by other young birds of this species which I subsequently examined, and consequently they were treated with a certain measure of respect.

After some days of experimenting with their wings, the young Herons left the nest on December 3, 38 days from the time of hatching, and when I went down a few days later, regretting the time had come for me to take the " hide " away and thus end many days of rare pleasure, I saw them following their parents on a fishing excursion out in the waters of the bay; they were almost as big as the adults and had their mature feathers.

The Birds of Port Phillip.

(Part II.)

By Robert Hall, F.L.S., C.M.Z.S., Hobart.

Having stated that certain of the birds of Port Phillip settled in particular stretches of country with altogether different conditions, we may now deal with closely allied species and genera with extended distribution.

I am not so happy with a statement on species and what they are. The great move in the direction of splitting species in Australia to indicate geographical areas has been made by Gregory M. Mathews. Taking for example his interpretation of the genus *Pardalotus*, we find him forced to ignore all speculum colours in which ornithologists had previously been nurtured. Following up his plan of fitting in subspecies to the zones, he shows eight subspecies to the one species, *P. striatus*, shown in Map III. and equal a. b. c. of Map II. which needs completing in the north. This method of making subspecies appears to be a natural one so long as they remain such. It is as sound as it is nteresting providing it does not get overdone in speculative diagnosis.

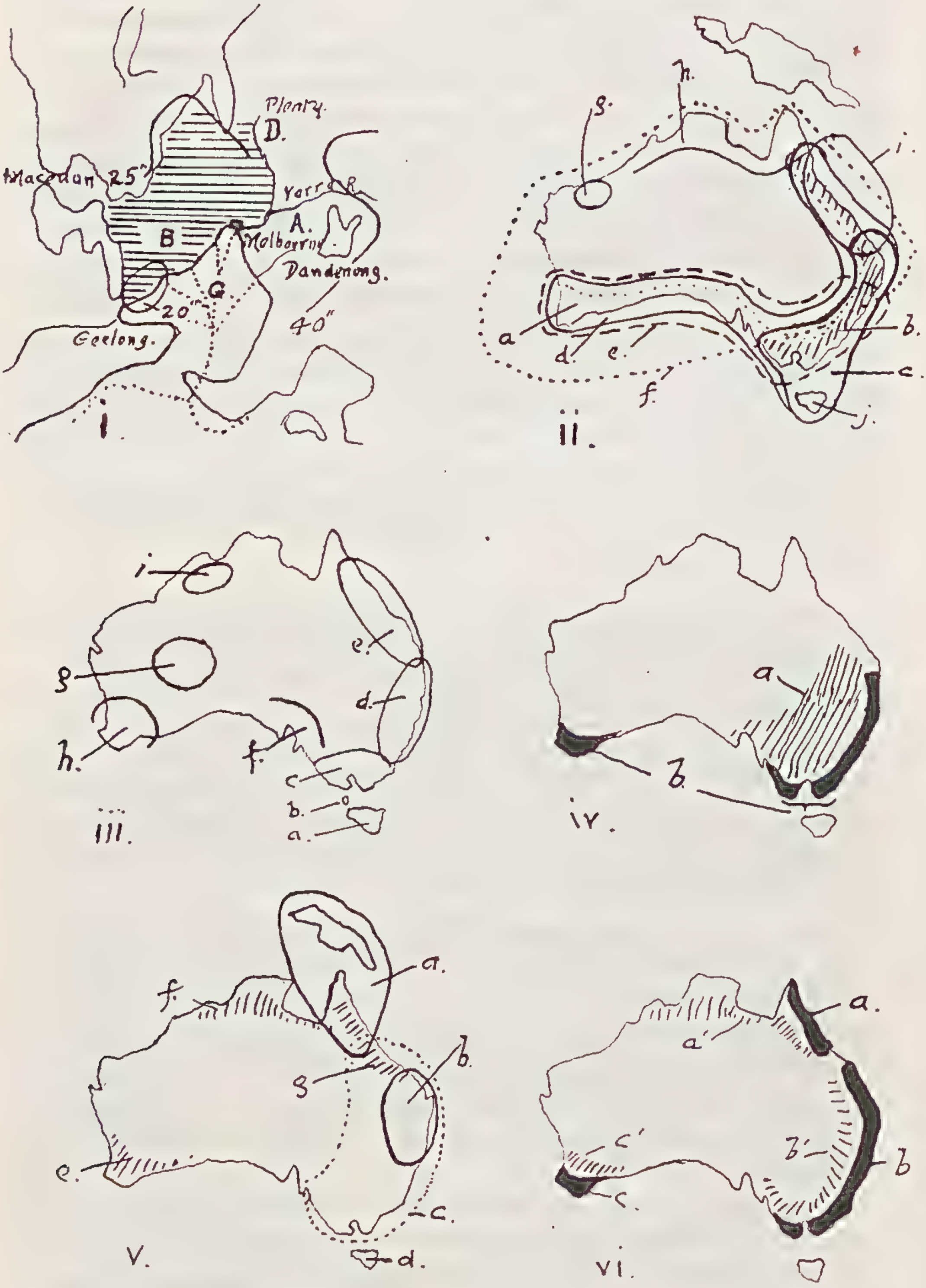
While reading over the divisions of this genus I am specially interested in *P. rubricatus*, described so far as found all round Australia except Victoria and South Australia. I do not say this distribution is incomplete, but it seems unprecedented; for so far as I know there is no other Australian bird with such a distribution. The great majority of birds have come south into New South Wales, while the minority have gone westward into the Northern Territory and Kimberley. Now, the interesting part played in this distribution is that this particular bird has gone south from North-west Australia into Western Australia. It has been usual for perching birds in Western Australia to come from South Australia, *i.e.*, with the earliest of the present-day population. If this has been done it is another case of discontinuous distribution, which appears, here, quite unnecessary. Odd specimens of this Pardalote have been collected in Central Australia. This probably means that the species in its journey south has taken to the dry back country of New South Wales to get into West Australia, thus avoiding Victoria. This also is a most unusual course, though not without precedent in more than one type of bird. As soon as we begin to note the variations of a species over its breadth of distribution we meet with more than we expect. In the *Mirafra* of N. W. Australia we meet with five definite colour-schemes, each inclined naturally to stay to its own colour ground. On land we get, *e.g.*, in the Gouldian Finch (*Poephila gouldiae*) the head of one nestling scarlet, that of another in same nest, black. At sea we find the Reef-Heron (*Demigretta sacra*) blue or snow white in the same nest.

In fifty species nearer us we see tendencies to get back on the old self. To show the view of Mr. Mathews I quote from *Novit. Zool.* XVIII., p. 387, 1912.

> After the examination of a long series of *Pardalotus* I have been compelled to ignore the white edgings of the primaries and the colouration of the tips of the coverts as I consider them of no primary importance, as specimens from adjacent localities gave different results. I could only conclude that we had three species living in the same locality and differing only in the most minute manner, and many subspecies of each one; or by elimination conclude that one species only existed, with eight subspecies. I chose the latter alternative and have based my diagnosis upon general colouration above, leaving out of consideration altogether the colouration of the tips of the coverts. I may here remark, however, that *P. s. striatus* seems to have constantly yellow-tips to the coverts, *P. s. assimilis* mainly orange, though throughout New South Wales, South Australia, and Victoria, this colour may be rarely found while in West Australia I have not yet seen any other colour than red.

Now, I am inclined to say that this is the true view, and will go further by stating that in West Australia I have collected a bird with a yellow speculum credited only to the Tasmanian race and in Victoria a bird with an orange speculum credited mostly to the Queensland subspecies. My mind looks out in fields of overlapping, of sporadic effect, and of intercrossings that keep us in the dark. By having a mass of material we would be able to say just what to expect in zoological areas and along the approximate boundaries of these areas or sub-areas.

It seems to me that Mr. Mathews made a great effort to cover the Australian field and that we are not in a proper position to help him or to support or refute his dissections of species as we should be. It might be made a request by the Union to the Australian Science Association, or even to Governments, that all museums, public and private, concentrate for a year in getting together material and loaning it and all in their possession to one centre for examination. If a schoolboy comes to me to get the true and particular name of a bird he sees,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MAPS I. TO VI.

I am not in a position to enlighten him. I can only tell him what I think.

The distribution of the Pardalotes according to the *Check List* of the Union is shown in Map II. while that of *P. p. striatus*, with eight subspecies according to Mathews, is shown in Map III. This latter way of diagnosing a species cuts off West Australia nearly every time, gives insular forms, as Tasmania and Kangaroo Island, divides New South Wales from Victoria, and, when opportunity occurs, Eastern Victoria from North Western Victoria. I, myself, lean towards this method and can only hope that it will not in the near future lead to too much confusion.

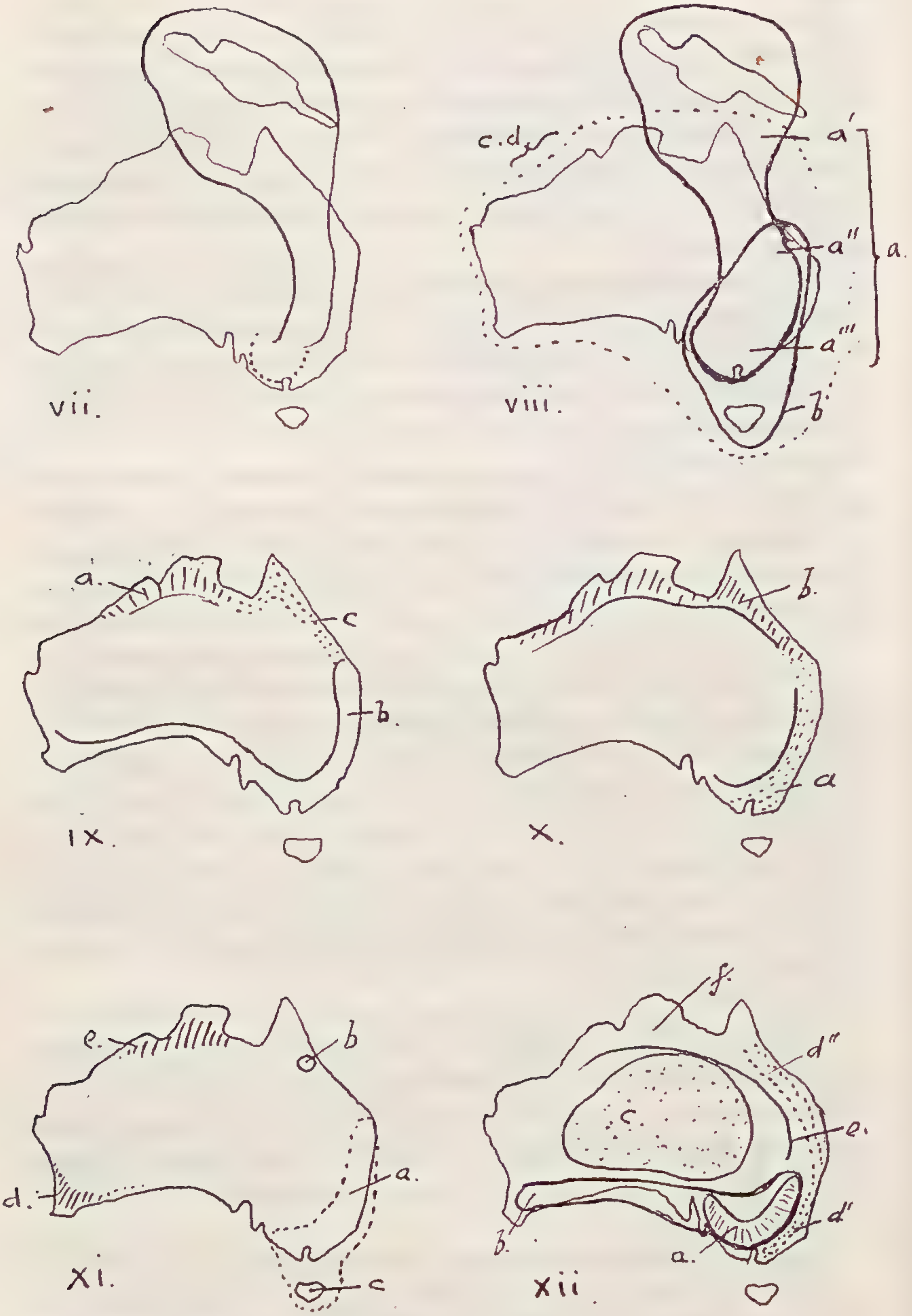
Map II.—a, Red-tipped Pardalote (*Pardalotus striatus*), b, Orange-winged Pardalote (*P. assimilis*), c, Yellow-tipped Pardalote (*P. affinis*), d, Spotted Pardalote (*P. punctatus*), e, Yellow-tailed Pardalote (*P. xanthopygius*), f, Red-browed Pardalote (*P. rubricatus*), g, Pallid Pardalote (*P. pallidus*), h, Chestnut-tailed Pardalote (*P. uropygialus*), i, Blackheaded Pardalote (*P. melanocephalus*), j, Forty-spotted Pardalote (*P. quadrigintus*).

Map III.—a, Yellow-tipped Pardalote (*P. s. striatus*), b, King Island Pardalote (*P. s. kingi*), c, Orange-tipped Pardalote (*P. s. assimilis*), d, Red-tipped Pardalote (*P. s. ornatus*), e, Victoria Pardalote (*P. s. substriatus*), f, South Australian Pardalote (*P. s. subaffinis*), g, Murchison Pardalote (*P. s. murchisoni*), h, Westralian Pardalote (*P. s. westraliensis*), i, Mungi Pardalote (*P. s. rogersi*). a-i. = a. b. c. of Map II.

This is without doubt one of the most interesting of genera. It is common about Port Phillip and most valuable as an insect-eating bird. Scale insects on the vegetation adjacent to orchards are kept down rigorously, and no toll is taken of cultivated fruits. The genus is finely marked and beautifully formed, has engaging nesting habits in tree-hole or creek-bank, and has also the sweetest and most interesting of call-notes that could be expected from so small a bird. Judging from Map II. it is not a genus confined to a small area, while Map III. shows one species to be widespread. It had been said that the rarest species has a million population. The many millions of Pardalotes, with their great economic value, have scarcely been taken into consideration by us.

It has been said they act as foster-parents to the Cuckoos. This surely is a mistake of the Cuckoo. How could a young Cuckoo expect an overthrow of its fellows from such a nest? I should be sorry to know it did, for I feel that no baby clinic, industrial school, or home for the poor among ourselves gives anything like the economic results we get from these little Diamond-Birds. (I am nevertheless for as many clinics in every district as there are species of Pardalotes in that district.)

Map IV.—This shows examples of distribution in the dry district, a, and in the wet, b. A, Plain-Wanderer (*Pedionomus*); b, Bristle-Bird (*Dasyornis*). The genus *Dasyornis* offers no clue just now to its origin. One is inclined to say the link is broken in Northern Queensland. There are two species in the East and two in the South-west, is marked. South Queensland, where it begins, is the stronghold of Australian birds. At Port Phillip there is now a barrier to migration.



MAPS VII. TO XII.

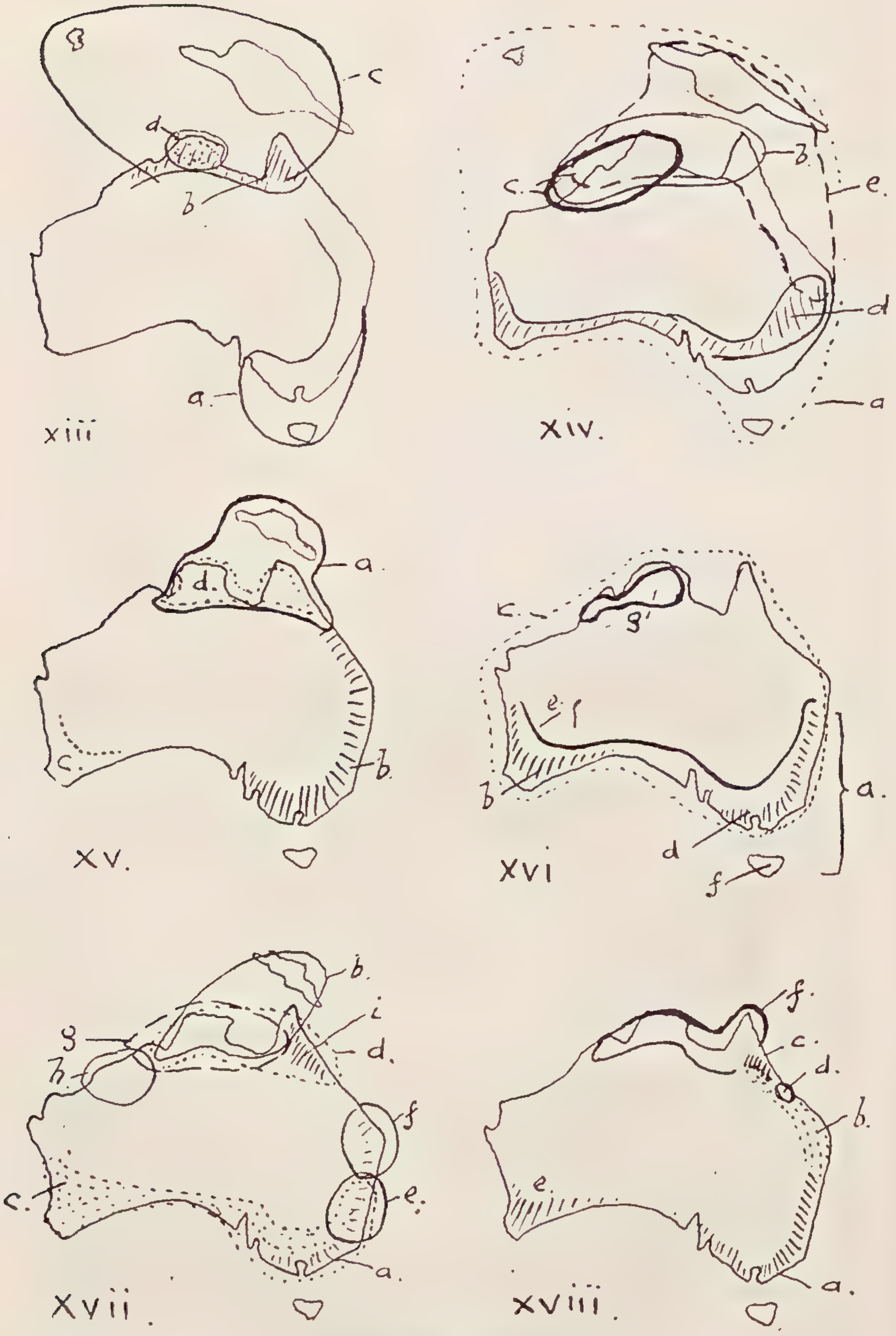
No species comes out on to the basalt plains of the Melbourne basin, which is altogether too dry and open. There is another break in South Australia, due to changed conditions. It is this kind of happening that helps to make an interest in the distribution of things.

The Plain-Wanderer is a bird of the Melbourne Basin, but neither to the east nor south of it. Love of the open, well-grassed country is always growing with this species, while with the Bristle-Bird the love of the close, secluded, ill-grassed, but well-shrubbed bush is just as strong. Neither " a " nor " b " has got over the Straits; " a " not being interested in the barrier forest between them in old days or the salt water of 1926; and " b " being more a creeper than an air-machine. The Plain-Wanderer might very well have got further west in a run of fine seasons, so I conclude it has the usual conservative nature and is prepared to venture only when the cycle changes, and it is too late.

Map V.—The Australian Frogmouths (*Podargin*æ) are so distributed as to give what I may call a model commonwealth plan of distribution and one that is typical of the greater number of Australian genera. The species are :—a, Papuan Frogmouth (*Podargus papuensis*), b, Plumed Frogmouth (*P. plumiferous*), c, Tawny Frogmouth (*P. strigoides*), d, Tasmanian Frogmouth (*P. cuvieri*), e, Short-winged Frogmouth (*P. brachypterus*), f, Freckled Frogmouth (*P. phalaenoides*) g, Marbled Frogmouth (*P. ocellatus*).

Species (a) begins in the Papuan subregion and expands south to d, Tasmania. At g, just north of the strongest link in the strongest line, a diversion is made towards the Northern Territory and Kimberley. Out from (d) the desert captures and makes the bird tawny to be in sympathy with the sands of itself. This twilight species needs it. Those birds which did not pass over to Tasmania swung off to the west or north-west to South Australia, passing along to South-west Australia. When this occurred the country of the Great Australian Bight was probably of quite another type, and altogether was encouraging and productive. Port Phillip has one species only, of the type *strigoides* (c) *P. brachypterus*; (e) is an offshoot from (c), just as (d) is; while (f) is the northern offshoot from the type. It would seem as if (e) having settled, and with nowhere in particular to migrate to, gave up having normal wings and became short-winged.

Map VI.—Shows parallel distribution; though very much discontinuous in its southern indication of a chain, it is one nevertheless. a, Lesser Whip-Bird (*Psophodes lateralis*), a^1, Northern Scrub-Robin (*Drymodes superciliaris*) b, Whip-Bird (*P. olivacea*), b^1., Scrub-Robin (*D. crunneopygius*), c, Black-throated Whip-Bird (*P. nigrogularis*), c^1., Pale Scrub-Robin (*D. pallidus*). Between b^1. and c^1. there is a large blank which is probably more apparent than real. I have no doubt that all those birds at present in South Australia, and isolated from those of the same recluse nature in South-west Australia, once had their bridge in perfect order. Port Phillip is a wayside from Cape York. The interesting point of this map is its parallel distribution for the most part along two types of country for several thousands of miles. I take it that a^1., b^1., c^1. were companionable birds with a, b, c, in the days before man of any colour was in Australia,



MAPS XIII. TO XVIII.

and that it suited them to go out and live in the drier and hotter area. Scrub-Robins came in from the Mallee country as far south and east as Melton, which offers them a little of their own. Port Phillip now breaks the distribution of the Whip-Bird and has done so for ages. The type of country of the Plenty River, d, Map I., offers little inducement and the basaltic plains (b) less.

Map VII.—Grass-Owl (*Tyto longimembris*). The normal area in which this bird lives its life is shown approximately in the continuous bend. Should the season be such that ground vermin (rats, mice, etc.), begin to travel south, the bird will move as well. Every few years Victoria is partially devastated by hordes of smaller rodents crossing rivers and passing through belts of timber until the Keilor plains are reached. The Owl again will reappear after years of absence, and shows its control in the balance of things.

Map VIII.—a, Sooty Owl (*Tyto tenebricosa*); b, Chestnut-faced Owl (*T. castanops*), c, Delicate Owl (*T. alba*), d, Masked Owl (*T. novæhollandiæ*), Species (a) is again subdivided by Gregory Mathews into a^1., a^{11}., a^{111}. This appeals to me as the correct geographical way of recognising intensity of colour in plumage, but there is no getting away from the innumerable inter-gradings on border lands; this is where the Sydney and Brisbane Museums should be of immense help in fixing species. The Chestnut-face (b) is the common Owl in Tasmania, while (c) is a common one west of it. The Delicate and Masked Owls are found all over Australia.

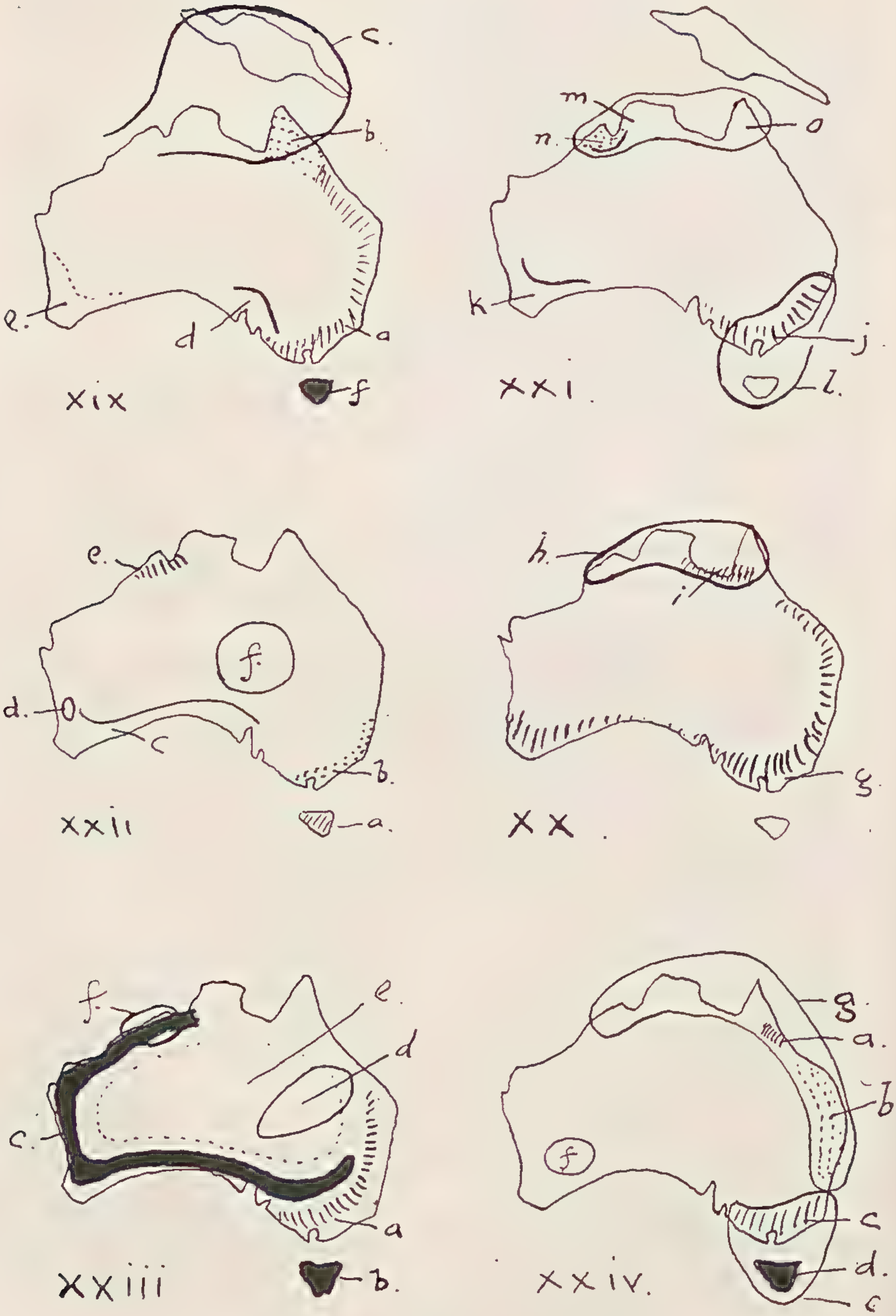
Map IX.—Winking Owls:—a, North-western Winking Owl (*Ninox occidentalis*), b, Winking Owl (*N. connivens*), c, Cape York Owl (*N. peninsularis*). The species were first described from specimens obtained in New South Wales, but I take it that (c) was first in Australia when expanding from the Cape York Peninsula westward, and later southward. This later was centuries before there was any man to think of naming it. Species (a) is the pale form of (c), constantly so, according to material at present available. This is so with the Owls of the Boobook section occurring in North-west Australia.

Map X.—Eagle-Owls:—a, Powerful Owl (*Ninox strenua*), b, Rufous Owl (*N. rufa*). There is a tendency for birds of (b) to get a rufous tinge that does not obtain on those of (a) because of the cooler forest. There is no Powerful Owl in the inviting forest of S. W. Australia, just as there is none in the similar forests of Tasmania. Were the present barriers too early for both of them?

Map XI.—The Boobook section:—a, Boobook-Owl (*Ninox boobook*) b, Red Owl (*N. lurida*), c, Spotted Owl (*N. maculata*), d, Western Boobook-Owl (*N. ocellata*), e, Pallid Boobook-Owl (*N. mixta*).

The Red Owl (b) is found at an elevation (Mt. Bellenden Ker); (c) is considered by some naturalists as purely Tasmanian; the bird found in South Australia being the Masked Owl, while *N. boobook* is New South Wales and Queensland; (e) is a dimorphic form of (d) or the paler species of (a) *N. b. boobook*.

Map XII.—Long tailed-Parrots (*Palaeornithinæ*):—a, Superb Parrot (*Polytelis swainsoni*), b, Regent Parrot (*P. anthopeplus*), c, Alexandra Parrot (*P. alexandræ*), d., d^1., d^{11}., King Parrot (*Aprosmictus scapulatus*), e, Red-winged Parrot (*A. erythropterus*). The Long-tailed



Maps XIX. to XXIV.

Parrots do not come close in to the Port Phillip district, though three of them (a, b, d) range near by (d) keeping in the east, (a) and (b) mostly to the north. (d¹¹.) is the northern form of (d¹.); b, c, f, are all species probably derived from the east, c being an exquisite desert form.

Map XIII.—Kingfishers (*Alcedininæ*):—a, Blue Kingfisher (*Alcyone azurea*), b, Purple Kingfisher (*A. pulchra*), c. Little Kingfisher (*A. pusilla*), d, Ramsay Kingfisher (*A. ramsayi*). We need only read over the distribution of the Australian Kingfishers to see that they are mostly of Papuan origin, so far as this continent is concerned (see Map XII. Vol. XIX. p. 84.) Looking at Maps XIII. and XIV., Port Phillip has only two of the nine species of the two genera. One (a xiii.) is a genuine river fisher, while (a xiv.) is a bush hunter. Of the genus *Dacelo*, the surroundings of Melbourne have only one species, *D. gigas*, our Laughing Kookaburra. It is a bird that mostly keeps away from water because the business of life, as carried on at present, does not make it a condition. It kills an immense amount of insectivorous young birds and useful lizards.

Map XIV.—*Halcyon* Kingfishers:—a, Sacred Kingfisher (*H. sanctus*), b, Mangrove Kingfisher (*H. chloris*), c, northern race of (d), d, Red-backed Kingfisher (*H. pyrrhopygius*), e, Forest Kingfisher (*H. macleayi*).

The Sacred Kingfisher leads a strenuous life in the dry central parts of the continent, where only a small portion of its birds can get an easy living. Even the getting of a living is not always so, as thousands of young of other species have died in their nests in the driest seasons. This species is the common wood Kingfisher of southern Victoria. The distribution of the Red-backed section. It appears as if the N. W. Australian race (c) had been derived from the S. W. species (d) having stood the strain of the desert dividing them, which is a barrier to most birds. By going north it altered the intensity of its colour.

Map XV.—Miniature house-building Flycatchers:—a, Yellow-breasted Flycatcher (*Microeca flavigaster*), b, Brown Flycatcher (*M. fascinans*), c, Lesser Brown Flycatcher (*M. assimilis*, syn. of b), d, Pale Flycatcher (*M. pallida*, syn. of b). Species b is common on the eastern side of Melbourne, within a few miles of it. A fifth species (*M. bruneicauda*) has been added in N. T. and N. W. A.

Map XVI.—Robins:—a, Scarlet Robin (*Petroica multicolor*), Flame Robin (*P. phoenicea*), Pink Robin (*P. rodinogaster*), b, western race of (a), c, Red-capped Robin (*P. goodenovii*), d, Rose Robin (*P. rosea*), e, Hooded Robin (*Melanodryas cucullata*), g, race of e, Northern Hooded Robin (*M. picata*), f, Dusky Robin (*Amaurodryas vittata*).

The Red-capped Robin (c), according to the R.A.O.U. *Check List*, is distributed over the whole of Australia. Mathews places the type as found in the Mallee of Victoria and South Australia and makes four subspecies for different parts of the continent. The Hooded Robins are not connected in Queensland and Central Australia. This appears to be a case of broken distribution.

Map XVII.—Warblers:—a, White-throated Warbler (*Gerygone olivacea*), b, race of (a) c, Southern Warbler (*G. culicivora*), d, Large-billed Warbler (*G. magnirostris*), e, Brown Warbler (*G. fusca*), f, Mangrove Warbler (*G. cantator*), g, Buff-sided Warbler (*G. laevigaster*) and Green-backed Warbler (*G. chloronota*), h, Dusky Warbler (*G. tenebrosa*), i, Black-throated Warbler (*G. palpebrosa*), Fairy Warbler (*G. flavida*). This latter species has a more southerly range (Rockhampton).

The tendency of this genus is to keep close up to the tropics, as many as eight of the ten species being within the warmer areas. It is noticeable that not one of the ten species has taken to Central Australia. The brown species (e) and the white-throated (a) show a tendency to get south, but no species has crossed to Tasmania. Species (c) in West Australia is a diversion from (a), which was an extension from Victoria. As there several species fringe the desert there is a tendency to paleness or buffy tinge. It is one of the smallest genera, with the sweetest of voices.

Map XVIII.—Shrike-Robins:—(*Eopsaltria* and *Poecilodryas*).—a, Yellow Robin (*E. australis*), b, Northern Yellow Robin (*E. chrysorrhoa*), c, d, races of (b) (e) Grey-breasted Robin (*E. griseogularis*), f, fi. Buff-sided Robin (*P. cerviniventris*), f^{11}. White-browed Robin (*P. superciliosa*), f^{111}. Grey-headed Robin (*P. cinerifrons*), f$^{\mathrm{IV}}$. White-tailed Robin (*P. pulverulentrus*), f$^{\mathrm{V}}$. White-breasted Robin (*P. albigularis*). (f embraces f^{1}.-f$^{\mathrm{IV}}$. f$^{\mathrm{V}}$. being referable to species 385 R.A.O.U. *Check List*).

The very local races are c and d, the former frequenting the Herberton Range and the latter Rockingham Bay. I have marked in the map the Shrike-Robins of the genus *Poecilodryas* (f) which is apparently the same as the genus *Eopsaltria*, just to show its tendency as a whole to cling to the north of the continent, one species alone coming down from Q'land to N.S.W. To save confusion it is not marked on the map. It is the Pale Yellow Robin (*P. capito*). Neither of these genera is easily separable from *Pachycephala* of Maps XIX., XX., XXI.

Map XIX.—Song-Shrikes:—(*Pachycephala*).—Yellow-breasted section:—a, Golden Whistler (*P. pectoralis*), b, Grey Whistler (*P. griseiceps*), c, Black-tailed Whistler (*P. melanura*), d, southern race of (a), e, western race of (a), f, Tasmanian race of (a).

The nestlings of (a) are uniform rufous like portions of the rufous-breasted section, Map XX.; the second stage in each case being grey. I take it that this yellow-breasted section, was preceded by the rufous-breasted section, from which it takes its origin. The sweetly ringing whistle of the male of (a) is fascinating in the gullies, and the bird can rank as one of the best songsters in Australia.

Map XX.—Rufous-breasted Whistlers:—g, Rufous Whistler (*P. rufiventris*), h, northern race of g^{1}., pale race of g. Species (g) could perhaps be subdivided by accepting Gould's name of *P. ornata*, S. W. Australia. Species (g) is plentiful just east of Melbourne.

Map XXI.—Whistlers other than XIX. and XX.:—j, Red-throated Whistler (*P. rufogularis*), k, Gilbert Whistler (*P. inornata*), l, Olive Whistler (*P. olivacea*), o, race of (n).

This section shows no continuity of distribution as we see in the previous two. Species (j) and (k) are very much the same, though the line in the map is broken, (k) is derived from (j).

Map XXII.—Comparing the distribution of Field-Wrens (*Calamanthus*), there is a likeness with Map III.; one genus keeping to shrubs, the other to trees. (a) Striated Field-Wren (*C. fuliginosus*), b, race of (a) c, Field-Wren (*C. camprestris*), d, Rock Field-Wren (*C. montinellus*), e, Rusty Field-Wren (*C. isabellinus*), f, desert race of (e).

One third of the continent, north-east, appears to have no *Calamanthus*, the part that generally links up with the Papuan sub-region. This is most unusual, because with nearly all Australian birds this is the strongest link in the chain of regular expansion over the continent. I can only think it a case of interrupted distribution or one which needs unusual explanation. Has (e) expanded from (f)? In the Mallee country, at the junction of (b) and (c), there appears to be a species in the making *C. c. howei*, so named.

Map XXII.—Quail-Thrushes (Ground-birds); *Cinclosoma*:—a, Spotted Quail-Thrush (*C. punctatum*), b, Tasmanian race of (a) c, Chestnut Quail-Thrush, (*C. castanotum*), d, Chestnut-breasted Quail-Thrush (*C. castaneothorax*), e, Cinnamon Quail-Thrush (*C. cinnamomeum*), f, race of (e).

Species (a) with race (b) have a doubtful difference as a whole. Species (c) shows the usual east-west extension of habitat, continuing northward in the west. Hard livers in dry hot country are inclined to this northward movement in the west, more so than for a southern movement of northern birds in the west. As with the Field-Wrens (Map XXII.) there is a vacancy in the north-east that needs explaining.

Map XXIV.—Thrushes (*Oreocincla*), c, Australian Ground-Thrush (*O. lunulata*), a, b, d, races of (c).

This species and its races have kept to the direct lines of Papuan expansion. As in the case of the Whip-Birds (Map VI.) the species could as well have expanded into either N. W. Australia or S. W. A. or both. Rather, they have adopted the plan of the majority of species and not gone off the southern course expansion until arrival in southern Victoria, when a small western division occurs, as shown in map. Just about this point a break occurs between (e) and (f) which belong to a subfamily of the Babbling Thrushes:—e, Little Grass-Bird (*Megalurus gramineus*), f, race of (e) g, Tawny Grass-Bird (*M. galactotes*).

The great majority of these maps show the present day Port Phillip birds to have their origin in Northern Queensland as the first centre of distribution in Australia, and they show the westerly extension of the species into south-west Australia and not continued into north-west Australia. The genera including the Port Phillip birds broke off in two directions from North Queensland, the smaller quantity of species allied to the Port Phillip species going into north-west Australia but not continuing into south-west Australia. It is a clearly defined, long, double line of expansion from their point of origin in Australia.

Days Among the "Corn-Birds."

BY T. V. GIVENS, R.A.O.U., Melbourne.

PREVIOUS to the month of November, 1925, I had not had any experience at first-hand of the Fantail-Warbler or Corn-Bird (*Cisticola exilis*); but about the middle of that month it was my good fortune to meet with a number of these birds, perhaps twenty pairs in all, which were nesting over about fifty acres on flats of the River Yarra, near Melbourne. These flats were the sites of numerous old billabongs, some of which were merely dry hollows containing growing grass, while others contained water. In these dry hollows there grew, about two feet high, a fine tussocky grass, which provided abundance of cover for the Corn-Birds and suited them admirably for nesting purposes.

My attention was first directed to these birds while crossing one of the hollows; I flushed several from the long grass. Retiring a distance of about thirty yards, and hiding myself in the grass, I watched one of the birds, whose actions suggested that it had a nest in the vicinity. After a few minutes the bird approached the spot where I had first seen it. It was carrying a piece of seed-down in its beak and, after perching for a few minutes on one of the tall seed-stalks of the dock-weed, to assure itself of the absence of danger, it suddenly dived into the grass and disappeared. I went over to the spot and disturbed it from a clump of grass. It flew a short distance and vanished again. I searched diligently and eventually the nest was discovered almost in the centre of a large tussock. It was placed about a foot from the ground and was so well hidden that a person could have passed within two feet without being aware of its presence.

The nest was suspended among the upright stems of the grass and was a domed structure, with the entrance at the side, facing east. It consisted of fine pieces of grass, principally small seed-stalks, intermixed with seed-down, much of which still had the seeds attached to it. The lining consisted entirely of seed-down and a woolly substance, the identity of which I was unable to ascertain. Growing stems of grass were twined round the outside of the nest, and the whole structure was very compact and harmonised well with its surroundings.

The nest contained three eggs, of a beautiful sky-blue colour, spotted with reddish-brown. The usual clutch of eggs may be either three or four, as three nests found later each contained four eggs, while the rest each contained but three.

I subsequently found six other nests of the species. They were similar to the first nest in manner of construction, and all faced east except one, which faced north. The position of two nests, however, differed from the others, inasmuch as they were placed within two inches of the ground and without the protection of any tussock. Their protection lay in the fact that the bird had cleverly sewn the

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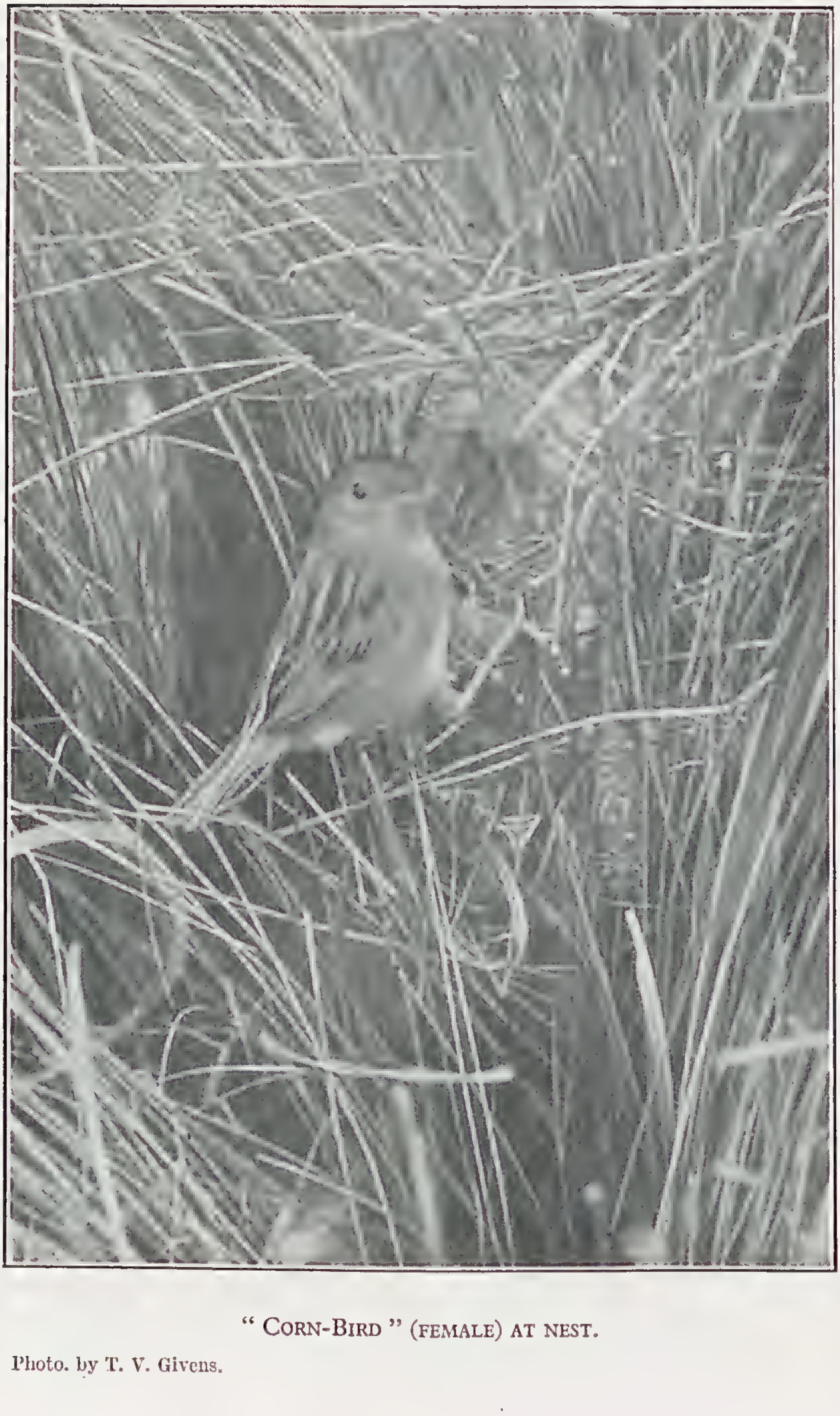


"CORN-BIRD" (FEMALE) AT NEST.

Photo. by T. V. Givens.

broad green leaves of a common weed around the nest, so that little was visible except the entrance. I do not think that the reason for this was a shortage of nesting sites, as one of the nests was built on the edge of a hollow which was similar to other hollows in which the birds had built their nests. My belief, although I may be in error, is that all of these birds originally built nests of this type and have only comparatively recently adopted the habit of nesting in tussocks.

The male bird did not take part in the incubation of the eggs or the feeding of the young, but contented himself with singing near the nest, either on a twig a few yards away or whilst flying. Occasionally, the presence of a nest could be detected by the excited scolding of a male bird. The female was quiet; she seldom called when near the nest. It was not hard to distinguish between the male and female birds, as the bright golden head of the male was very conspicuous.

The notes of the birds consisted almost solely of two kinds, though when scolding, the male bird seemed to use a large variety of notes. Generally, however, only the two notes were used. They were a rasping sound and two or three whistling notes, the latter nearly always following the former. The male bird especially made a habit of doing this, generally while flying apparently aimlessly. Sometimes when I approached a hollow all would be silent, with not a bird to be seen, but in a few minutes first one and then another would rise from the grass to a fair height and commence singing, the song being sustained for several minutes. The calls of the male and female birds are similar, except that the rasping sound made by the male is much harsher than that made by the female. The young birds also made a rasping sound when being fed, though it had not the volume of the call of the adult bird—it was like nothing so much as the sound made by a snake when gliding through grass.

The resemblance of the Corn-Birds, when flying, to large butterflies was especially marked as they fluttered over the grass. When ascending, however, the flight was more irregular. The birds usually flew in the " butterfly " manner, but they were capable of a swift and sustained flight. An instance of this was given when a nest was discovered in an isolated clump of grass not more than a few yards across. Surrounding it completely there grew a very short grass, only a few inches in height, since it was continually being eaten by cattle, which did not touch the long, tussocky grass. The female bird, in order to obtain sufficient nesting material, had to fly over this grass a distance of fifty or sixty yards to the nearest patch of long grass. This flight was not made high, but only a few feet above the ground, and the bird flew straight and fast each time she made the journey.

Very often the birds would not rise from the grass until I was within a few feet of them, so that when searching for a nest it was not safe to assume that the bird had risen from a nest when it did this. It was not hard to distinguish between occasions when the bird had gone to the nest and when it had only disappeared into the grass, because the bird always was very cautious about going to the nest and did not merely dive into the grass, as it did when not going to the nest.

The food of the Corn-Birds consisted for the most part, I think, of insects, which were obtained principally from the ground. There seemed to be an abundance of insects in the grass, and the birds obtained them by running along the ground, at the same time searching every nook and corner of the grass.

On the first day that I attempted to obtain a photograph of the Corn-Birds they were shy and would not come near the camera. It had therefore to be placed about ten feet away, and moved up at intervals, in order to allow the birds to become used to it. This occupied about half a day, and it was the day following the discovery of the nest before the birds were sufficiently accustomed to the sight of the camera to permit a photograph to be taken.

Early that day I arrived at the nest, equipped with all necessary photographic material. When the camera was placed in the position in which it had last been on the previous day the birds showed no hesitation in visiting the nest; but when the camera was placed almost opposite the entrance of the nest, they were doubtful about visiting the cradle. Very soon, though, they overcame this distrust, probably on account of the fact that one of the eggs had hatched during the night. The light on this day was very poor, particularly in the morning when most of the photographs were taken; the afternoon was unsuitable because the light was then behind the nest.

When approaching its home the Corn-Bird would take short flights until within five yards of the nest; then it would drop to the ground and creep through the grass until it reached the nest. It always approached from behind, forcing its way through the tussock in which the nest was built. It was necessary to keep one's eyes continually on the nest, as it was impossible to see the bird as it approached.

There was no difficulty in taking the first few photographs of the Corn-Bird. It was soon tame enough to visit the nest, and the fact that it would hesitate a little enabled the photographer to expose a plate before it entered the nest. But when the bird became more accustomed to the camera there was difficulty in taking a photograph while the bird was in the correct position, as it generally entered the nest with little or no pause at the front.

It was the week following before I was again able to visit the nest. The young birds were then about half grown, and even at this time I did not observe the male bird feed them. Possibly he also shared in the feeding of the young, though too wary to do so when I was present. The young birds, after they left the nest, became adept at hiding in the grass, and it was an extremely difficult matter to locate them once they were hidden.

The Vanishing Plain-Wanderer.

BY E. A. D'OMBRAIN, M.B., R.A.O.U., Sydney.

MY object in writing this article is to attempt to put together some, if not most, of the scattered items concerning the Plain-Wanderer (*Pedionomus torquatus*), and in view of the fact that the species is becoming very much scarcer, to show its present known distribution as well as those localities where it once abounded or was noted as being present. Very little is known about the habits of the Plain-Wanderer, and the few facts gleaned by observers, and embodied in this paper, meagre as they are, should be of interest to bird-students.

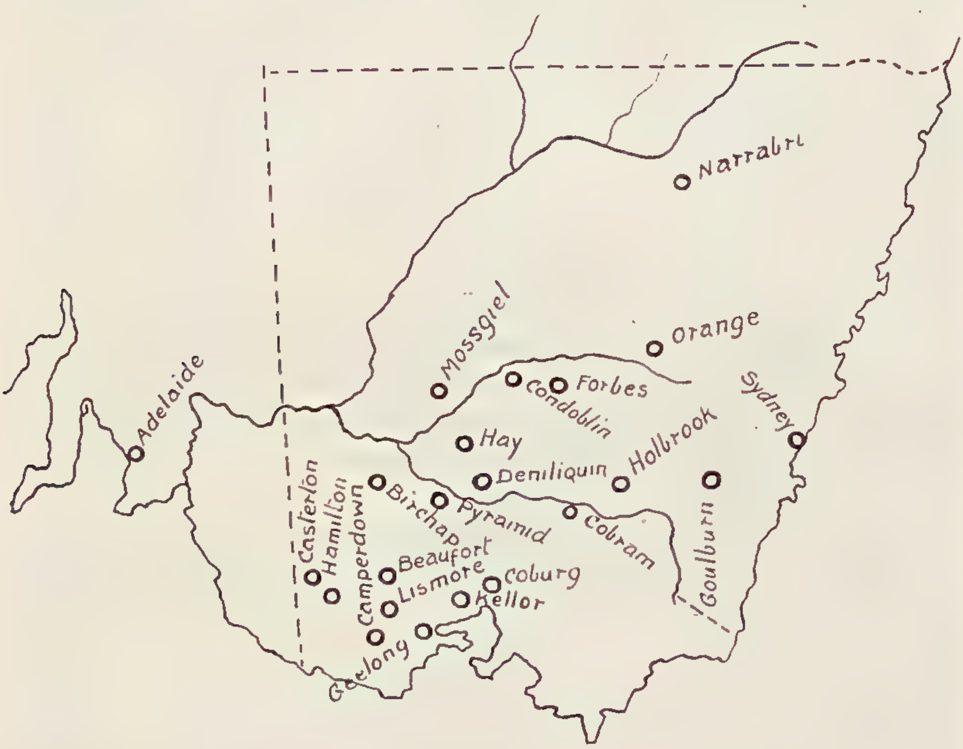
The fact that all members of this group of small, fowl-like birds make use of the ground, in contra-distinction to those species which mainly inhabit trees and bushes, renders observation difficult. They do not catch the eye, so to speak. Moreover, being of somewhat sombre dress they escape the notice forced upon us by other birds whose habits render this pleasant task a much easier one. Thus, we are forced to rely for information as to their distribution upno those who have noted mainly their scarcity or otherwise, and upon such notes as shooters of other Quail have made during their excursions in search of ground game. An endeavour will be made in this article, therefore, to embrace the records made from time to time by various observers, and to link these with the data respecting localities noted by naturalists and others since the year 1840, when the species was described by Gould.

As Victoria seems to possess the largest distribution, I decided I should get all the information I could from there. With this object in view, in 1922 I enlisted the help of my brother, F. G. D'Ombrain, resident in Victoria, as the one most likely to be of service in determining the present haunts of this species, owing to the fact that his business relations bring him into touch with the men on the land (and many of these are sportsmen, in the real sense of the word), and because of his own knowledge of the habits and haunts of this and other species. The period of inquiry extended from August, 1922, to the end of 1925.

The Plain-Wanderer is well named, because it is only found on grassy levels, and is thus separated from other quail-like birds, which are to be found in scrub, stubble or swamps. I have never heard, for instance, of one being seen in a stubble field.

As long ago as 1908 I was surprised to find that collectors in Sydney were without specimens of Plain-Wanderers' eggs, and in some instances they appeared to doubt a statement I then made, that as a young man in Melbourne I used to get clutches so frequently as to think little of them. Moreover, when I secured clutches that were deeply incubated, I used to experiment in dissolving the contents of the eggs with various digestives, notably zymine (B.W.Co.). On these occasions, with the help of the public analyst of Victoria, Mr. Price, I was allowed to use the incubators (germ) at the University of Melbourne for the experiments.

All my clutches came from the region of what is now Point Cook, about 3 miles from North Williamstown, 9-10 miles from Melbourne city. This region extends on to the Keilor Plains, and in it the birds were much in evidence. That this is so is borne out by the late G. A. Keartland, who had a lot of experience of Plain-Wanderers in this locality and in captivity. The time I refer to was 30 years ago. The late H. G. Evered, of Melbourne, is quoted by the late A. J. North, of the Australian Museum (*Special Catalogue No.* 1) as stating that in the year 1895 he saw more of these birds than ever before, and in three days at Bendigo, Coburg and Bulla he shot ten brace. All such testimony goes to prove that this area in Victoria thirty years ago was well stocked with Plain-Wanderers.



DISTRIBUTION OF THE PLAIN-WANDERER.*

At the present time, although there is evidently nothing like the number of birds, the Plain-Wanderer still continues to frequent the localities mentioned, in varying quantities according to the nature of the season. What I wish to stress is that although the bird is decreasing in numbers, it is still fairly plentiful in some of its old haunts. In July, 1922, Mr. C. Waddell, of Melbourne, shot at Sydenham

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*The Plain-Wanderer has also been reported as far north as Central Queensland. See Barnard, *Emu*, Vol. XXIV., p. 254 (1925).—EDITOR.

(15 miles from Melbourne, on the Diggers' Rest railway line) two birds on different days. The first bird was shot in mistake for another Quail when the light was failing; otherwise it would have been unmolested. The second one was shot purposely for a specimen for me. Another man (Mr. Cockrill) reported to my brother in the same season (1922) that he captured one which his dog had "set." It was early morning, and the bird seemed cold. He warmed it in his hands for five minutes, then made a nest for it in a tussock and left it. Another observer (Mr. O'Neil) reported the bird from Beaufort (Vic.) and yet another from Hamilton (Vic.). A further friend (Mr. J. Bowler), reported having captured one near Holbrook (N.S.W.), some 40 miles N.E. from Albury. Yet another friend caught two this season at his place near Geelong; they flew into wire fencing. Some few years ago, my nephew reports, the birds were fairly numerous at Cobran Station, Deniliquin (N.S.W.).

Nowfor the year 1923. Mr. Bennett, a sportsman and good observer, was out on the last day of the open season at Keilor (Vic.) when, just at dusk, his dog flushed a pair of Plain-Wanderers. Darkness prevented them being observed further. Again, in July, 1923, two other birds were captured at Keilor. A dog put his paw on one. This bird died immediately it was picked up, evidently from injury, and the specimen was sent to me; I set it up for a specimen case. A friend of Mr. Waddell's, who never shoots these birds, captured a pair (male and female) which he liberated again. In August of the same year (1923) my brother inquired of a friend who is a property owner in the western district of Victoria, whether he ever saw Plain-Wanderers around his place, near Camperdown. He replied that he had seen one quite recently, and knew a man who had one in captivity in the same district. A friend of mine, Mr. V. Ward, was shooting Quail at Lismore, Vic., in the season of the same year. He declared that the Plain-Wanderers were in such evidence that he "could do nothing with his dogs." (This is because the birds keep running and stopping, when dogs are "working" them, only rising when it suits them.) They were very plentiful on the last few days of the open seasom.

We come now to 1924. My nephew, whom I mentioned above, captured two birds at Birchip (Vic.). These became quite tame in captivity and would eat out of his hand. After he had kept them for about 10 days, rain came in the night, following a droughty spell during which crops failed in some parts of the Mallee. In the morning the birds were found dead in the aviary, with their skulls smashed from trying to escape. The coming of the rain probably meant to them the call of feeding grounds to be.

In the accompanying sketch map I have marked with a circle the places where Plain-Wanderers have been reported, and in the list have inserted the years in which they have been observed. A tabulated summary, such as follows, shows at a glance the wide distribution of the species, and at the same time the remarks for each locality will give some idea of the prevalence of the bird to-day. It is to be noted that almost everywhere there is a notable decrease in this respect.

The list is as follows :—Newtown, N.S.W., 1863 (now a densely populated suburb of Sydney). Mossgiel, N.S.W., 1864-74; plentiful; few noted now. Pyramid Hill, Vic., 1875 ; breeding ; no note as to numbers. Springfield, N.S.W., 1875, 1890, 1891 ; no note as to numbers. Adelaide, S.A., 1887-1923 ; fairly frequent. Hay, N.S.W., 1895 ; no note as to numbers. Bendigo, Vic., 1876-1895 ; very plentiful. Bulla, Vic., 1895 ; very plentiful. Coburg, Vic., 1895 ; very plentiful. Goulburn, N.S.W., 1889 ; no note as to numbers. Orange, N.S.W., 1902 ; very plentiful years ago. Narrabri, N.S.W., 1904 ; no note as to numbers. Forbes, N.S.W., 1904 ; no note as to numbers. Condobolin, N.S.W., 1913 ; no note as to numbers. Laverton, Vic., 1894 ; plentiful, scarcer now. Sydenham, Vic., 1922 ; fairly plentiful. Beaufort, Vic., 1922 ; no note as to numbers. Hamilton, Vic., 1922 ; no note as to numbers. Holbrook, N.S.W., 1921 ; scarce. Cobram, N.S.W., 1912-13 ; fairly plentiful. Werribee, Vic., 1922 ; plentiful. Keilor, Vic., 1923 ; plentiful in 1880 ; scarce now. Camperdown, Vic., 1923 ; not plentiful now. Lismore, Vic., 1923 ; fairly plentiful. Birchip, Vic., 1924 ; fairly plentiful. Yanko, Jerilderie, 1925 ; occasional. Dungog, N.S.W., 1925.

The Plain-Wanderer has a very strong " game " scent, hence is easily—too easily—" set " by sporting dogs ; and as it prefers running to flying in order to escape, a well-trained dog is constantly " fooled " by the bird. For this reason sportsmen dislike it. The assertion has been made that during the breeding season this scent is absent from both bird and nest. One observer is positive about this, and states that it applies to " all other breeds of the Quail family."*

Another curious point about the Plain-Wanderer is its posture. It stands very erect, like a Bustard (Plain Turkey) with head erect, neck at full stretch, and the poise of the body thrown forward on to the toes, as if about to make what human runners term " a flying start." (Compare this with the crouching attitudes of other Quail.) On being flushed it usually flies only a short distance.

All sportsmen appear to agree that Plain-Wanderers do not make their appearance until towards the end of the open season, even in " good " Quail years, a fact that should save many of them from guns. Not being of a very timorous nature, and because they trust to their legs and to hiding after a quick run, rather than to their wings, these birds are easily caught by the hand, or by dogs. Probably almost every observer who has come into contact with them had, at one time or another, caught a bird. In captivity the bird soon becomes exceedingly tame ; it is very quiet, and always may be seen standing in the manner described.

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*This point has been remarked on previously by writers upon game-shooting. In a book published some fifteen years ago, Mr. G. T. Teasdale Buckell (England) stated his conviction that during incubation birds either lose their scent or have the power of suppressing it. There may be a scent, but if so it is different, and one which setters and pointers do not recognise. Certain other birds, which secure their safety by constant watchfulness, do not appear to suppress their scent. Another point of interest is that some birds, even when not nesting, appear to suppress their scent if a bird of prey is overhead. It has been noticed that dogs which have been finding game at long range all day will pass close to a game-bird hiding from a Falcon and will not detect its presence.—EDITOR.

Undoubtedly, the Plain-Wanderer is a local migrant, appearing even to-day in its favourite localities when the season is good and plenty of grass seed is to be had, and not being found in times of drought. It is all a question of food supply. What enables the birds to decide not to travel to their favourite haunts when drought is prevailing ? Also, what enables them to know that with the coming of rain there will be food in plenty ? It has been noted that in captivity these birds are very active at night. Probably the local migration takes place nocturnally.

Now a few words as to the cause of the reduction in the numbers of Plain-Wanderers. Various observers have different views as to this cause. One attributes it to sheep disturbing the birds. If this be so, why does not the same thing apply to Stubble Quail ? Another blames the domestic cat " gone wild." There can be no doubt that this cause is a very potent one. Another blames the fox, and supports his theory with the fact that the birds are easily caught by dogs. I agree that this is one of the greatest factors in the increasing scarcity of the Plain-Wanderer. Doubtless, too, quite a number have been accounted for by shooters, who shoot the birds because they lead a good dog such a dance (and incidentally the shooter also). As for bush fires, I cannot think this is a very influential factor. Fires occur most frequently in scrub or forest country, and were doubtless almost as frequent before the advent of the white man. Poison laid for rabbits doubtless takes toll, but as the birds are seed-seaters I fancy very few would be killed by such means unless the poison were phosphorised wheat, which has proved deadly to hosts of other birds. To sum up, I suggest that sheep and cattle eating the seed-bearing food-plants and foxes devouring the birds, are the chief factors in the diminution.

I would like to see the Plain-Wanderer taken out of the game list " open season " and wholly protected. This would mean no hardship to sportsmen, as all admit that the species is of little use for food, and many, if they suspect their dogs to be " setting " the bird, call off the dogs. The Plain-Wanderer breeds well in captivity if given proper surroundings. Would it not be possible to breed them for liberation on certain holdings, and ask the owners to make these areas strict sanctuaries ? By some such means we might retain this vanishing species, rather than be sitting idle while it fades out before our eyes.

Birds of Pallinup Estuary, West Australia.

BY D. L. SERVENTY, R.A.O.U., Perth.

ANY contribution to the scanty literature on the avifauna of the south coast of Western Australia should not lack interest, though it must be confessed that there is little outstandingly new in this record of a week's visit to the estuary of the Pallinup or Salt River, also known as Beaufort Inlet. The trip was made in conjunction with Mr. Rodrick P. Wellstead, of Gnowangerup, who knows well the south-east coast country and is also interested in its natural history.

Perth was left on January 1st, 1926, and the rail journey ended at Gnowangerup (183 miles S.E. of Perth), whence the 80 miles of country (65 miles in a direct line) to the estuary were traversed by motor lorry. There was an enforced wait of five hours for a train connection at Tambellup, and while here casual bird observations were made. I was particularly interested to note a White-backed Swallow (*Cheramœca leucosternum*) flying around; later, one of Mr. Wellstead's sons described to me a black and white bird he had recently seen at its tunnel nest in a steep bank at Gnowangerup. Other species observed at Tambellup were: Bronze-winged Pigeon (sp. ?), White-faced Heron, Nankeen Kestrel, Purple-crowned Lorikeet, White-tailed Black Cockatoo, Western Rosella, Twenty-eight Parrot, Welcome Swallow, Tree-Martin, Scarlet Robin, Western Warbler, Golden-breasted Whistler, Grey Fantail, Black-faced Cuckoo-Shrike, Western Thornbill, Broad-tailed Thornbill, Yellow-tailed Thornbill, Magpie-Lark, Green-backed Silver-eye, Red-tipped Pardalote, Brown Honeyeater, Singing Honeyeater, Gold-winged Honeyeater, Dusky Miner, Red Wattle-Bird, Grey Bell-Magpie, Grey Butcher-Bird, Western Magpie. The surrounding country is lightly timbered with eucalypts and "jam" (*Acacia acuminata*).

Gnowangerup is situated about 23 miles to the eastward and is similarly wooded, dwarf eucalypts (Mallees) also being a feature of the landscape. From this township the bold, striking peaks of the Stirling Range, 30 miles to the southward, are clearly visible; the eastern prominences, Ellen Peak and Bluff Knoll, being also in view from the Pallinup Estuary, which is distant from them some 30 miles S.E. I had little opportunity for bird-observing at Gnowangerup, but the following species were added to the Tambellup list: Little Cormorant, Lesser Goshawk, Black-and-White Fantail, Dusky Wood-Swallow, Rufous Tree-Creeper and Australian Pipit.

The intervening country to the estuary is for the greater part uninviting plain, with occasional belts of eucalypts and mallee, the only habitations after leaving Borden being occasional sheep holdings. The Pallinup River, which rises east of Broome Hill, is an intermittent stream flowing as a continuous watercourse only in some winters. At other times it consists of a succession of salty reaches, some of which, including those of its tributaries, as the Corackerup, Peenebup and Warperup Creeks, may be of impressive extent. At its mouth it broadens into a fine estuary—Beaufort Inlet—over three miles in length and one mile across at its widest point. The estuary is situated about 70 miles N.E. of Albany and about 30 miles west of Bremer Bay, which contains a somewhat similar aquatic feature, the Wellstead Estuary, a visit to which in January, 1916, has been described by Mr. W. B. Alexander.* As with other rivers of this type in the south of the State, a sandbar has developed at its mouth, an obstruction which has completely locked in its waters from the ocean for the past three or four years. Last year the Pallinup did not flow and the estuary at the time of my visit was low, having a beach all round its shores. For some years prior to about 1900, however, I was informed that it was dry altogether, forming an extensive samphire flat on which sheep were pastured. Since then the estuary has always been full. No fresh water exists in the vicinity apparently, except in soaks and wells, yet animal life is fairly plentiful.

The landscape comprises somewhat broken and undulating country, and almost impenetrable belts of " mort " (*Eucalyptus platypus*)—I had a rufeul experience of their efficacy as natural barriers—cover some of the slopes and gullies. The banks of the estuary are fringed with she-oak (*Casuarina glauca*), paperbark (*Melaleuca*), mallees and " yate " (*E. cornuta*); but except for samphires (*Chenopodiaceæ*) in places they are free of undergrowth and therefore offer comparatively little shelter to bird life. Some of the dwarf eucalypts were in flower, notably two marlocks, *E. priessiana* and *E. tetragona*, the latter a handsome plant growing in the more open parts and known locally as white mallee. *Banksia baxteri* was numerous and in bloom, all these plants collectively attracting great numbers of Lorikeets and other honeyeating birds. The coast-line in the vicinity of the estuary includes sandy beaches and rocky shores, bordered by fairly precipitous sandhills. From the forelands Cape Riche, with Cheyne Is., and further west, Bald Is. may be seen, while visibility to the eastward is abruptly terminated by Cape Knob.

The native name of the river, Mr. Wellstead stated, was Bollingup, or Pollingup, from which the present name, Pallinup, has been derived. To the white settlers, however, it is generally known by the truly descriptive name, the Salt River. I have included in the accompanying list of birds as many of their aboriginal names as could be obtained, my main indebtedness being again to Mr. Wellstead. The names are spelt phonetically, but to pronounce them with accuracy it should be remembered that the first syllable generally appears to bear the accent.

Besides the following 73 species which were observed at the estuary mention may be made of a young Little Penguin which a fellow-camper had given to him by a visitor to Cheyne Is. (12 miles W.), where it was obtained. The head and foreparts were yet covered with down, but the steel blue feathering had appeared on the back. The bird, which would strike up a friendship with the most casual acquaintance, " camped " in a disused rabbit burrow and was fed on fish.

**Emu*, Vol. XVI., p. 24.

Emu (Waitch), *Dromaius novæ-hollandiæ.*—A fine pair were noted near the "point" of the estuary on the day of arrival. A report was also received that a young one had been killed by Eagles.

Hoary-headed Grebe (Poorajean), *Podiceps poliocephalus.*—Three little Grebes, which were considered to be of this species, were noted on one occasion on the estuary.

Black-browed Albatross, *Diomedea melanophrys.*—A dead bird was found on the beach and only slightly decomposed. The following measurements were taken: Length, 790 mm.; wing, 484 mm.; extent of wings, 2066 mm.; culmen, chord, 125 mm.; depth at base, 43 mm. The feet were pinkish in colour as were the centres of the webs, the margins of which were yellow. The beak was black, the culmen being flecked with yellow. The dimensions and the condition of the beak indicated it to be an immature bird.

Caspian Tern, *Hydroprogne caspia.*—A solitary bird noted one morning on the estuary near the sand bar.

Crested Tern, *Sterna bergii.*—Like Mr. Alexander, at Bremer Bay, I did not see this species in the flesh, but found a skeleton in the vicinity of the Swans' nests, entwined in the sharp twigs of a small dead tree where it had apparently staked itself. The skull was collected.

Fairy Tern, *Sterna nereis.*—Small parties were noted twice by the sand bar, but they did not remain any length of time in the locality.

Silver Gull (Jeranger), *Larus novæ-hollandiæ.*—Scarce on the ocean beach, but plentiful on the estuary, flocks congregating where fish from the nets were being cleaned.

Pacific Gull, *Gabianus pacificus.*—A pair were observed on the coast on one occasion.

Pied Oyster-Catcher (Goran Goran), *Hæmatopus ostralegus.*—A small party of about four were usually to be seen on the estuary at the sand bar.

Black Oyster-Catcher, *H. unicolor.*—Small parties of three and four were noted on the rocks on the beach.

Red-capped Dottrel, *Charadrius ruficapillus.*—One of the most plentiful of the waders and especially common on the shore of the estuary.

Hooded Dottrel, *C. cucullatus.*—Odd pairs were observed on the estuary near the bar, and also on the ocean beaches. These birds seem particularly loath to take to the wing, neither firing nor chasing causing them to rise readily. They run with agility and sometimes fly a foot or so to maintain their distance from a too curious observer; a long flight is the last resort.

White-headed Stilt, *Himantopus leucocephalus.*—One flock and odd pairs noted on the estuary.

Banded Stilt (Deet or Teet, all species). *Cladorhynchus leucocephalus.*—A flock present on the estuary. The majority seen were immature birds, with pure white plumage other than the wings. Amongst a flock of about 30 or more were noted only about three or four banded birds.

Curlew, *Numenius cyanopus.*—One bird was flushed from a rocky point on the upper reaches of the estuary about 2½ miles from the bar. As it flew off it uttered cries sounding like "Carr-*er.* Carr-*er,*" there being also a suggestion of a whistle in the notes.

Greenshank, *Tringa nebularias.*—A small party was noted on the upper reaches of the estuary. Their presence can be detected by the clear whistling note.

Red-necked Stint, *Erolia ruficollis.*—A plentiful wader, especially numerous on the estuary.

Sharp-tailed Sandpiper, *E. acuminata.*—A few noted on the estuary near the sand bar.

Curlew-Sandpiper, *Erolia testacea.*—A few in company with the preceding two species. An immature bird, of the year, was obtained.

Great Knot, *Calidris tenuirostris.*—While inspecting the muddy shores of a peninsula jutting into the estuary about 2 miles from its mouth, I disturbed a very large Sandpiper, quite dwarfing in size the Red-capped Dottrels which were in the vicinity. It had a long, straight bill, streaked greyish upper parts and a prominent white rump, and both in flight and on the ground it uttered a double-noted whistle. It would not allow of a close approach though I stalked it for some time. When ultimately it flew away I could follow it with the glasses to where it dropped, somewhere near the sand bar. I am confident it

PALLINUP ESTUARY, WITH OCEAN IN THE DISTANCE.

Photo. by D. L. Serventy.

was this species. Mr. Alexander obtained it at Bremer Bay—the first record for the south-west.

White-faced Heron (Pullong), *Notophoyx novæ-hollandiæ.*—Plentiful on the estuary, and a pair were once noted coming on the ocean beach over which they circled before returning. They reminded one of Reef Herons as they flew low down, over and around the rocks.

Black Swan (Weeler, Marlee), *Chenopis atrata.*—A fair flock of these birds was present on the estuary, and at one place—the low-lying, samphire-grown point of the peninsula afore-mentioned—a breeding ground was discovered, containing approximately 50 nests. These were in a double row near the water's edge.

Chestnut-breasted Shelduck (Gnimeruk), *Casarca tadornoides.*—The most common Duck on the estuary, and there were thousands present. They were very gun-shy, however, and shooters had to stalk carefully their birds or else hunt at night or early in the morning, the " bag " in any case being meagre. Pallinup is becoming a popular holiday camping-place, and the reaction on the game, especially Ducks, is most marked. The position is aggravated by the unbridled lust to slay of a certain type of visitor which may be exemplified by the acts of an earlier party at the estuary. These, I was told, could not restrain themselves even from firing at the Swallows as they flew past. It is hardly surprising, therefore, that the Ducks allowed themselves to be admired only from a distance; consequently it was difficult to identify the species.

Grey Duck (Yate), *Anas superciliosa.*—I saw definitely only one bird, which happened to be flushed from the bank.

Chestnut Teal (Calyung), *Virago castaneum.*—Flocks of these birds were stated to be on the estuary, but the only evidence I met with of their occurrence was the wings and feathers of a plucked bird.

Grey Teal, *V. gibberifrons.*—One bird was seen near the bank of the estuary at the soaks. It was a small specimen, apparently disabled, for when disturbed it would not fly away but walked off to the estuary from the soaks where it used to spend the night.

Musk Duck (Quodyuk), *Biziura lobata.*—Flocks of these birds occurred on the estuary, and one was estimated to include over a hundred individuals. A dead bird was once found entangled in a fishing net.

Cormorant (Cardacut), *Phalacrocorax carbo.*—A few were noted on the estuary, and a skeleton found near the Swans' nests.

Little Black Cormorant, *P. ater.*—Some of these birds were noted singly or in company with the following species.

Little Cormorant, *Microcarbo melanoleucus.*—Fairly common, and principally seen on the middle and upper portions of the estuary.

Australian Pelican (Peelabong), *Pelecanus conspicillatus.*—A flock was present on the estuary. Their soaring flight, with hardly a perceptible movement of the wings, was admired.

Lesser Goshawk (Carakine), *Astur cruentus.*—Noted. Birds of prey were fairly plentiful at the estuary and in the surrounding country.

Wedge-tailed Eagle (Warlick), *Uroëtus audax.*—A pair were observed near the estuary. The species was observed also on the run down from Gnowangerup.

White-bellied Sea-Eagle (Chillian), *Haliaetus leucogaster.*—Noted on the estuary, where it was seen fairly frequently.

Peregrine Falcon (Moldern), *Falco peregrinus.*—One bird was seen near the estuary on the return trip.

Little Falcon (Nowerngor), *F. longipennis.*—One was seen perched on a tree overlooking the estuary, and on being approached flew towards me, circling inquisitively overhead.

Brown Hawk, *Ieracidea berigora.*—Seen at the estuary.

Nankeen Kestrel (Martiet), *Cerchneis cenchroides.*—Noted occasionally around the estuary.

Boobook Owl, *Ninox Boobook.*—An individual was flushed one afternoon from a tree on the bank of the estuary, and some of the party heard it calling early the following morning.

Purple-crowned Lorikeet (Cower), *Glossopsitta porphyrocephala.*—Perhaps the most plentiful land-bird in the region. Flocks were noted everywhere, no doubt attracted by the flowering eucalypts. The vagaries of its distribution, as influenced by the flowering seasons of the various eucalypts, are indicated by the fact that Mr. Alexander did not record it at Bremer Bay, though he visited that place also in a January.*

White-tailed Black Cockatoo (Gnular), *Calyptorhynchus baudini.*—A flock was present at the estuary. The occurrence of these birds at any spot is regarded as good evidence of water being near at hand.

Grass-Parrot, *Neophema elegans.*—One bird was observed perched on a tree at the bank of the estuary, and 2 miles from the bar, but it was not definitely identified and may possibly have been the Rock-Parrot (*N. petrophila*). Though the locality does not suggest it to have been the latter species this is not conclusive, as Mr. F. Lawson Whitlock tells me he has seen the Rock-Parrot near Wilson's Inlet 7 miles from the open ocean. I saw no sign of the Twenty-eight Parrot (*Barnardius semitorquatus*) further south than about 15 miles N.W. of the mouth of the estuary.

Rainbow-Bird (Perinbo), *Merops ornatus.*—Noted around the estuary. One pair were in the midst of nesting duties within a few yards of our camp.

Welcome Swallow (Cabbridge), *Hirundo neoxena.*—Swallows were fairly common around the shore of the estuary.

Tree Martin, *Hylochelidon nigricans.*—Parties were occasionally seen flying about.

Scarlet Robin (Demclick), *Petroica multicolor.*—Common in the timbered parts.

Hooded Robin, *Melanodryas cucullata.*—This species was observed in the more open parts of the region, but did not appear to be common.

Southern Weebill. *Smicrornis brevirostris.*—Heard in the wooded areas around the estuary.

Black-and-White Fantail (*Chitti Chitti*), *Rhipidura leucophrys.*—A common bird. I did not see the Restless Flycatcher (*Seisura inquieta*).

Golden-breasted Whistler, *Pachycephala pectoralis.*—Heard in the wooded parts and in the thick mallee.

Black-faced Cuckoo-Shrike (Carebumdulah), *Coracina novæ-hollandiæ.*—Often seen at the estuary.

Rock Field-Wren, *Calamanthus montanellus.*—One bird was disturbed in the low scrubs at the upper reaches of the estuary, about midday, when it showed no inclination to make a speedy escape, merely walking away with tail erect behind a bush.

White-fronted Chat, *Epthianura albifrons.*—Fairly common in the open parts.

Broad-tailed Thornbill, *Acanthiza apicalis.*—Noted in the lightly wooded banks of the estuary.

Yellow-tailed Thornbill, *Acanthiza chrysorrhoa.*—A few parties seen.

Spotted Scrub-Wren, *Sericornis maculatus.*—Observed in the thickly growing mallees.

Masked Wood-Swallow, *Artamus personatus.*—Seen in the open areas on the return journey.

Dusky Wood-Swallow, *A. cyanopterus.*—Noted in the open country; birds were also seen in immature plumage.

Magpie-Lark (Kulyab-eruk), *Grallina cyanoleuca.*—Seen twice on the shore of the estuary.

Green-backed Silver-eye (Poang), *Zosterops gouldi.*—A common bird in the thickets.

Red-tipped Pardalote, *Pardalotus ornatus.*—This species was heard and seen among the taller eucalypts, but it was not abundant.

Yellow-tailed Pardalote, *P. xanthopygius.*—While we were having our first meal at the camp a Pardalote was seen to enter its nest only a few feet away. The hole, protected by a fallen dry bush, was situated in flat ground having a gentle slope towards the estuary. The little creature delighted the party by its apparent disregard of the interlopers nearby, and also by the cautious, mouselike manner in which it always entered the nest. From an adjoining bush it slowly surveyed the landscape and then carefully made its way to its underground home. By the frequency of the visits it was presumed the nest contained young. The bright yellow rump—seen to advantage when the bird was preening itself—at once distinguished it from the Spotted Pardalote (*P. punc-*

**Cf.* also T. Carter: "The Birds of Broome Hill," *The Emu*, Vol. XXIII., p. 140.

tatus) which at first it was thought to be. I noted other individuals in the region. Mr. George Masters collected the Yellow-tailed Pardalote at "Mongup, Salt R." in January, 1869.* This place is situated at the junction of the Pallinup River and the Peenebup Creek, about 40 miles N.W. of the estuary. I was interested to learn that the local vernacular name for the ground-building, and perhaps all, Pardalotes was "Budgerygar," a name usually applied to the Warbling Grass-Parrot (*Melopsittacus undulatus*). The native name is Bilyabiet.

White-naped Honeyeater, *Melithreptus lunatus*.—Noted in the wooded parts along the shores of the estuary, especially among the Yate trees.

Brown Honeyeater, *Stigmatops indistincta*.—A very plentiful Honeyeater at the estuary, and a spirited contributor to the early morning bird music.

Western Spinebill, *Acanthorhynchus superciliosus*.—Fairly common, and noticed among the banksia blooms.

Tawny-crowned Honeyeater, *Glyciphila fulvifrons*.—The open-country Honeyeater, where it was often to be seen. Noted at the dwarf banksias. It has a pleasing song in the dawn, which is not heard during the day.

Singing Honeyeater, *Meliphaga virescens*.—This species did not frequently come under notice.

Gold-winged Honeyeater, *Meliornis novæ-hollandiæ*.—Birds were noted in the scrubs right on the sea beach, but the species did not appear to be plentiful in the area.

Red Wattle-Bird (Tungaluk). *Anthochaera carunculata*.—A numerous bird especially in the tall timber such as the "yate."

Australian Pipit (Perit Perit), *Anthus australis*.—A plentiful species all over the district and on the journey from Gnowangerup. It was also seen running along the shore of the estuary like a Dotterel.

Grey Bell-Magpie (Jarburn, Jarbell), *Strepera versicolor*.—This species was numerous in the wooded parts, which it enlivened by its peculiar penetrating notes.

Grey Butcher-bird (Yoyjeddie), *Cracticus torquatus*.—Noted at the estuary.

Western Magpie (Kulbardie), *Gymnorhina dorsalis*.—A common bird at the estuary.

A Sea-Birds' Haven.

By KENWY LAWRY, Melbourne.†

HAVING observed birds at Willis Island for six and a half months, and noted carefully their domestic habits, a few notes may be of interest. The period in which I made these observations was from May 1st to November 15th, 1923, this being the main nesting season.

The island contains bird-life of ten species, namely: Sooty Terns (*Sterna fuscata*), Noddy-Terns (*Anous stolidus*), White Gannets (*Sula dactylatra*), Grey Gannets (*Sula leucogaster*), Red-legged Gannets (*Sula sula*), Land Rails (*Hypotænidia philipensis*), a small white Gull (*Sterna bergii*) with black back, Frigate-Birds (*Fregata ariel*), and a species of small Snipe, also the "Night-Bird" or "Mutton-Bird" (*Puffinus pacificus*). The Sooty Terns are in the great majority, and to me made the most interesting study. There were a great number of these on the Island when I arrived there in May, but the mating season started in June and the number increased by thousands; in fact, walking about the Island was difficult owing to these birds flying in one's face, and it was necessary to knock them out of the way to save walking on them.

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*A. J. North, *Nest and Eggs of Birds in Australia*, Vol. II., p. 28.

†Communicated by A. H. E. Mattingley.

The Sooty Terns started to lay in July and made a rookery at the western end of the Island. They lay on the bare sand amongst the grass, not on the beach. No nest is made and they lay within a few inches of each other. The majority lay one egg, but many two. The eggs are the size of a pullet's, grey in ground color and spotted with dark red. Spots are thick at the big end and thin out towards the small end. Some eggs have red smudges as well as spots. The eggs are so large in comparison to the birds that it is almost impossible for the female to cover the egg. The birds which lay two eggs sit on one and put a wing over the second; but they change the order of the eggs every day so that each eggs gets an equal share of the warmth of the brooding bird. A big percentage hatch both eggs. The male as well as the female does a share of the brooding.

At night-time, whichever bird is sitting, the mate flies practically the whole time and calls continually pass between them. The female does all the feeding of the young, and this is mainly done with squid, each fish being about the length of a little finger. She has great difficulty in feeding her young owing to the food being robbed in the action of disgorging by the Noddy-Tern, who swoops down and tries to secure the food before the young can swallow it. I have seen cases in which the young Sooty Tern and the Noddy-Tern struggled for food and the Noddy-Tern eventually flew up carrying both the food and the young Sooty Tern. In one case, the young bird was carried up some 70 feet before being dropped, and was killed in the fall.

The mother bird not only feeds her young, but gathers salt water which she brings in and disgorges to the young bird. This is mainly done in the heat of the day. The feeding takes place night and morning.

It is interesting to note that the young of the Sooty Tern start to practice flying a week after they are hatched, and keep at it until they can raise themselves a short distance from the ground. They fly freely within four weeks of hatching and then disappear from the Island altogether. Up to the time they disappear they are grey, with occasional white feathers.

The Noddy-Terns do not lay on the sand, but nest in the branches of shrubs which grow on the Island. The vegetation on the Island is very scrubby, and the nests are never more than three feet from the ground. These birds are not nearly as plentiful as Sooty Terns, but their young leave the Island about the same time as those of the Sooty Tern.

I observed that the Sooty Terns laid in five batches, of thousands of birds in each batch. The first batch made rookeries at the western end of the Island, the second batch at the north, the third at the south-west, the fourth at the south-east, and the fifth at the crest of the Island, mainly around the buildings.

The " Night-Birds " arrived at the Island in October, and used their old burrows to lay in. They are never seen in the daytime, but come up at night and utter a very distressing call, which suggests somebody moaning with pain. They keep this up all night.

The Gannets appear to breed all the year round. The Grey and the Red-legged Gannets make their nests in the shrubs. The White Gannet lays on the coral, just above high water mark. These birds feed their young for about four months before they fly; the youngsters seem to make no attempt to learn to fly for the first three months. It is heavy work for the mother birds to feed them, as the young birds are very voracious. The Gannets have difficulty also in bringing the food home, owing to the Frigate-Birds, which are continually on the watch and fly out to meet them, catching them by the tails with their beaks and shaking the Gannets until they disgorge food. They then let go, and swoop down to recover the disgorged food before it reaches the water.

The Frigate-Birds do not fish for themselves, but live wholly on food pirated from the Gannets. There are only six Frigate-Birds on the Island, and they mainly roost on the wireless aerial, which is a splendid point of vantage for them. I shot one of these Frigate-Birds, which was 6ft. 7in. from tip to tip of wings.

The small white Gulls on the Island I cannot classify, having never observed the species anywhere else about the Pacific islands which I have visited. This bird does not nest on Willis Island. The small birds similar to Snipe frequent the beaches, but are few in number and are not very strong fliers. They do not appear to breed on the Island.

The Land-Rails are evidently of the same species as the Land-Rail on the mainland. They do not fly, but are very fast runners. They are very fond of water and drink great quantities if it is given to them; but as there was no fresh water on the Island before it was inhabited, these Rails evidently secured moisture from the eggs of the Sooty Terns. This they do at the present time, even if supplied with water. They will eat almost anything. I brought three of these birds alive to Melbourne.

The Land-Rail has a dangerous enemy in the bird of the Snipe variety. This bird can almost kill a Rail with a single peck, but will not attack unless it corners a Rail where it can be easily tackled. The Rails are continually fighting amongst themselves. The method of killing is by pecking in a vital spot under the wing. There are only about thirty Rails on the Island. These birds start breeding in April and each pair has only one brood.

Eggs on the Island in the breeding season are so abundant that we found it necessary to lay duck boards between the quarters and the station.

The White-backed Swallow.—In an article by Mr. W. B. Alexander in last October's issue of *The Emu*, it is stated that no record of the White-backed Swallow (*Cheramœca leucosternum*) has been made east of the main dividing range. I have seen these birds on a number of occasions, in this district (the Upper Hunter Valley) and on one occasion, during the spring of 1924, a pair nested in a creek bank not far from my home.—M. THOMPSON, Antiene, N.S.W.

The Occurrence of *Nettion* Species in New Zealand.

BY R. H. D. STIDOLPH, R.A.O.U., Masterton, N.Z.

CONSIDERABLE confusion has occurred in the records of the occurrence of the genus *Nettion* in New Zealand, and it is time that the matter was rectified. Practically every author writing on New Zealand birds has added to the confusion rather than elucidating it. The trouble has occurred with *Nettion castaneum* and *N. gibberifrons*.

I take it that the following differentiation of the species is correct (*Birds of Australia*, Lucas and Le Souef, 1911, pp. 148-9) :—

Nettion castaneum (Chestnut-breasted Teal)—Male : Head and neck dark glossy green, etc., etc. Female : Brown, etc. etc. (no green on head). Larger.

Nettion gibberifrons (Grey Teal)—Both sexes alike, or almost so (and *resembling the female* of *N. castaneum*). Smaller.

Sir W. Buller (*Manual of the Birds of N.Z.*, 1882, p. 68) records *Querquedula gibberifrons* (Little Teal) from both islands, and his description of the species agrees with *Nettion gibberifrons*, as above. He adds a footnote that Professor Hutton thinks this is *Anas castanea*, Eyton.

In the Supplement to the *Birds of N.Z.* (1905, Vol. II., p. 10) Sir Walter Buller includes *Nettium castaneum* (Australian Teal) on the list of N.Z. birds. But in this case he was only guessing, as two birds procured at Nelson were never examined by him or any competent ornithologist. He merely states : " From the imperfect account furnished, the only species to which I can refer them is the Australian Teal . . ." This record cannot be allowed.

At the same time, Buller quotes that there is a *female* of this species (*N. castaneum*) from N.Z. in the British Museum (*Catalogue of Birds*, Vol. XXVII., p. 254). As this bird is a female the identification may not be correct. Again, Buller mentions *N. gibberifrons*, the Wood-Teal (Supp. II., p. 10) and recalls his first acquaintance with this bird.

Hutton and Drummond, in *Animals of N.Z.* (1909, p. 327) record *Nettion castaneum* (Grey Teal) as breeding in the North Island. Their description indicates no difference between male and female birds, and states " sides of the head brownish white."

Now follows Mathews' and Iredale's *Reference List of the Birds of N.Z.* (*Ibis*, 1913, p. 408) wherein *Nettion castaneum* (Eyton) (Australian Teal) is recorded as an " accidental visitor, few occurrences, extralimital." Here *Nettium castaneum* and *N. gibberifrons* (Buller, Supp., Vol. II., p. 10) are regarded as synonyms.

Mathews and Iredale add a note and state :—" We have been unable to satisfy ourselves of the occurrence of *N. gibberifrons* Müller, either in Australia or New Zealand. The only New Zealand specimens available undoubtedly belong to the present species." Here, be it noted, they regard Buller's two references as being to one and the same species, but *N. castaneum* and *N. gibberifrons* are regarded as distinct species.

In 1920, there follows Mathews' and Iredale's *Name List of the Birds of N.Z.* (*Austral Avian Record*, Vol. IV., pp. 49-64.) Unfortunately, here the matter is made chaotic. They enumerate both *Virago gibberifrons* (Müller, 1842, *Anas*) Grey Teal, and *Virago castanea* (Eyton, 1838, *Mareca*) Green-headed Teal. But note the vernacular names !

In October, 1925, I drew the attention of Mr. W. R. B. Oliver, of the Dominion Museum, Wellington, to a specimen labelled in that museum *Virago castaneum* (Grey Teal) Wairarapa Lake. Mr. Oliver replied that " the specimen is a female, but males have been taken from the same locality and they are identical in colouration with the females. The species, therefore, is *Gibberifrons* and not *Castaneum*." He added that the bird is apparently established in New Zealand, as Mr. O'Connor (an authority on N.Z. birds) states that it breeds somewhere near Wairarapa Lake.

From the chaos created in the past, I can find no valid record of the occurrence in New Zealand of *Nettion castaneum*. That species must therefore be omitted from the New Zealand list. Mr. Oliver agrees with me in the matter. The species entitled to be included in the N.Z. list is *Virago gibberifrons* (Müller, 1842, *Anas*) Grey Teal

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Protection of Australian Birds.

By J. NEIL McGILP, R.A.O.U., King's Park, Adelaide.

THANKS are due to Mr. A. H. E. Mattingley for his summing-up in the January *Emu* of the case for the protection of birds.

Most of us desire to ensure the preservation of our useful and characteristic native animals ; though, unfortunately, some of us may disagree from others as to the right course to pursue to secure this. Some are apt to take offence from " straight talk," and though all ornithologists should be united in the endeavour to protect our useful and interesting birds, we now apparently only agree to differ. So an actual scheme for the preservation of Australian birds remains in abeyance.

Is it not time that we realized our responsibilities and set to work to try to save our fast disappearing fauna ? It is better to have tried and failed than never to have tried at all. After carefully reviewing the position, I am sure that if all our energies are expended upon sanctuaries, we will reap the best result. It is not much use making reserves close to the cities and expecting birds that have long ago been driven out before the increased human population, to return to such reserves. We have destroyed the feeding-grounds of the birds and we cannot give them suitable conditions. There is a far better prospect of saving the birds if we see to it that in all new country opened up there is an extensive area set apart as a sanctuary for birds.

As a matter of cold fact, the opening-up of country for settlement reduces the number of some species of birds, but it increases the number of other species. Cleared land calls for Magpies, Larks, Plovers, etc., but it loses the Honeyeaters and scrub birds; while the former species increase, the birds requiring timber decrease. It is the survival of the fittest over again; only those birds that can adapt themselves to the altered conditions can survive and hold their own. Unfortunately, in Australia we have some birds that cannot adapt themselves to the altered conditions caused by man with his plough and domestic stock. In our main cities, I think, the area now built upon did not carry more birds in its natural state than it does to-day. True, many species have been driven out, but others have increased. As one traverses the streets, few birds are noticed, but in the gardens and parks we seldom fail to find birds. I do not speak of introduced birds. Those introduced species have adapted themselves to circumstances and have increased so greatly that they have become pests. It is also possible for many Australian birds to increase to such an extent as to become pests.

Mr. Mattingley wants us to ask ourselves, "Has man been placed upon this planet to use fairly nature's gifts?" and wants an expression of opinion as to the meaning of "live and let live." To the former, one without hesitation answers, "Yes." The Almighty placed aborigines on this continent and provided them with food in the shape of plant and animal life. We were brought to life to make the most of nature's gifts—the greatest of which is our fair Australia. Is it conceivable that the Almighty meant us to leave our country undeveloped, to let the land remain in its virgin state? If so, we should hand it back to the original occupants of Australia or their offspring, and leave all the timbered lands alone for the birds and other animals. Was not Australia given to us as a talent? It is up to us to make the best use of it.

Birds were given to us for assistance in our labour. If we reduce our hired labour below minimum requirements, we fail to do the best with our heritage; birds are workers for us. If we destroy them beyond the minimum required, we suffer. Some birds were undoubtedly given us to provide food. Now, every stock-breeder knows that when more than his annual increase is killed off every year, the flock or herd will soon cease to exist. If the breeding flock is diminished, we must either reduce our demand upon it or purchase more stock. So it is with our game birds, as their numbers decrease so must our demands be reduced or the end is in sight. A supply suitable for 1,000,000 people is not likely to serve 5,000,000 people very long.

To keep all our birds at the present-day level we must let Australia stay as it is to-day. Are we justified in doing this? If we are to prosper and increase our kind upon this land we must develop our resources; this means the further thinning out of scrub-lands and the reduction of special kinds of birds. With room for only a certain number of birds, is it not advisable to attempt to hold on to those that are valuable and harmless to us? Why should we try to save birds that are recognized as pests? Again, many of our birds will probably become extinct, notwithstanding that we pass all the laws possible to protect them. Failing a law to stop development of our land, it is probable that nothing will save these birds. They cannot live in the altered conditions caused by clearing the land.

Therefore, the matter of the moment is the preservation of the birds that are of value and not harmful to us. Let us formulate a scheme that will have for its main point the preservation of the known useful birds ; such birds soon become known for the good they do. Land-owners could, without injustice, be asked to protect these birds. It is not wise to ask them to give protection to birds or other animals that they know to be pests ; it only makes them into adversaries to our endeavours to protect birds. Allow them to judge which are destructive animals.

Thus, if the members of the Royal Australasian Ornithologists' Union will give me this privilege of preserving useful and harmless birds and of reducing what I consider destructive animals, they are at liberty to have my station of 1000 square miles of country, leased from the South Australian Government, declared a reserve for native birds and other indigenous animals. I require the right to destroy any bird or other animal that I consider a pest. I will undertake to protect all the other native animals to the best of my ability. I have for years protected kangaroos, with the result that to-day they are in such numbers as to be a pest, and it is costing me money to reduce the surplus. If I protect birds till they become so numerous as to be a pest, I surely have the right to kill off any surplus. No broad-minded person can expect me to allow my station to become a kangaroo-run, or to suffer from the depredations of any animal that I have protected so well that, by their increase, they have become pests.

I believe there are many land-owners, like myself, recognising the need of birds, who will offer their holdings as reserves so long as they have the right to kill any animal which has unduly increased, or any animals they consider pests. If we ask for a fair thing from land-owners, we can hope for success. Many protect useful and harmless birds to-day and will gladly co-operate with us in any scheme to preserve such native birds.

I ask for a better understanding of the position, for the co-operation of all who are interested in the welfare of our Australian birds and for the cessation of disputes over what are, after all, trivial matters. We cannot prevent the destruction of birds by drought, fire, or occupation of land by settlers, but if we can show the settlers the need of preservation of many of our birds, they will, in their own interests, see to it that all birds not harmful to them, will have a full measure of protection. This indeed is true protection with a hope of preservation. We must have a place in every district where birds can breed. As a matter of fact, the time has come when we must breed more stock. To do this, we must have reserves, preferably those controlled by private individuals, or by a body interested in the birds.

Stray Feathers.

Summer Migrants (1926).—The Welcome Swallows (*Hirundo neoxena*) left us unusually early, perhaps owing to the many months of heat and drought from which the island suffered. This species appeared to have departed from this district by 22nd March, and about the same date from Launceston; a couple were reported from the latter locality in mid-May, but these were doubtless the "resident" Swallows which have been observed for many years. The Bronze Cuckoo (*Chalcococcyx plagosus*) was still calling in the middle of January, and about the same time young Pallid Cuckoos (*Cuculus pallidus*) were noticed sitting on overhead wires and on fences, the beautiful silvery plumage rendering them very conspicuous; they were quite silent. These young Pallids, as well as those of the Fantailed species, were seen through February and most of March, after the old birds had crossed the Strait to the mainland. Wood-Swallows (*Artamus sordidus*), as well as Pipits (*Anthus australis*) were seen in grass-paddocks at Cartside, in the limestone district of Northern Tasmania, on 4th April, a warm, sunny day. I did not see any Pipits here at Devonport from 19th April until 28th of that month, when four (probably parents and offspring) suddenly appeared at a grassy spot by the roadside, which is a favourite resort. Since then a pair, in fine spruce plumage as if newly moulted, were seen at the same spot on 18th May. Every season I notice this late appearance of a few, and think it probable that they have come up from the midlands and south of the island, after our coastal-breeding Pipits have departed. Not a single Spine-tailed Swift (*Chœtura caudacuta*) was seen in this district during the past summer; the same absence was noted last season. Small parties of Summer Birds (*Graucalus parvivostris*) moved leisurely towards the north-west through the latter part of March and the first three weeks of April, alighting in the groups of gums to feed.

When in the limestone district mentioned above, I was shown a specimen of the Lesser Golden Plover (*Charadrius dominicus*) which had been obtained on a flat by the creek there, so that these migrants sometimes go inland; the bird was in fine feather, spotted here and there with gold, and must have been developing its northern breeding-suit. The same man had one of the beautiful little males of the Sparrow-Hawk (*Accipiter cirrocephalus*), which was the first of that sex he had come across.—H. STUART DOVE, West Devonport, Tasmania.

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Strepera in Tasmania.—The following notes on the localisation of *Strepera* may be useful. On the north-west coast forty to fifty years ago *S. fuliginosa* was very abundant; during ploughing time the high bush on the outskirts of the farms would ring with their joyous calling as they collected in readiness to descend upon the newly ploughed furrow. That was at sea level. In the Huon hinterland, hilly and more or less heavily wooded country, both *S. fuliginosa* and *S. arguta* are in evidence, the latter being the more common. On the north-east coast and in lightly-wooded country further inland *S. arguta* is the more common; but both are seen. In the midlands, a few miles south of Lake Echo, *S. arguta* was heard. At Lake St. Clair and in heavy timber about the Cuvier River, *S. fuliginosa* was in large flocks; it was also met with in the open country, at an elevation of 2,700 ft. At the Great Lake (3,000 feet) both species are about equally distributed in the lightly wooded areas. In the high timber nearer Deloraine, *fuliginosa* was seen in a large flock. So far as my observation goes, that species seems to prefer high timber and *arguta* the more open country, both irrespective of elevation. I have never seen *arguta* in flocks. Wing and tail markings cannot be used as a means of identification by field observers. One has to judge by the note, colour, general appearance, and size. *S. arguta* is the larger, slightly browner, more loosely flying and utters a single note, "tullock."—G. MURRAY ANDERSON, Newtown, Tasmania.

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Prolific Breeding.—Single broods in a season may be more or less of a rule in South Australia, as suggested in *Emu* correspondence, but it is certainly not a general rule. There are striking exceptions, chief among which I name the Soldier-Bird (*Myzantha garrula*) in my district Here is a record of one pair for twelve months (1924).

BROOD 1. Situation, a trellised grape-vine on house verandah. *Two* young ones left this nest on *February* 5. BROOD 2. Same situation; new nest. *Three* young left it on *April* 8. BROOD 3. Nest 2 used again. *Two* young left on *June* 17. BROOD 4. Same situation; new nest. *Three* young left on *August* 18. BROOD 5. Orange tree close to house. *Two* young left nest on *October* 7. BROOD 6. same situation as 5; new nest. *Three* eggs on *December* 19; nest destroyed.

There is no doubt about the identity of the parents in this case. Their repeated use of the same situations in such close proximity to my house, and their familiar and fearless behaviour enabled me to recognise them as the same pair in each case.

The above record further illustrates the all-the-year-round breeding habit of *M. garrula* in Queensland. I have nest records of the species for every month of the year. No doubt this prolificacy partly accounts for the fact that Soldier-Birds here outnumber the birds of all other species (excluding gregarious nomads, such as Honey-Parrots and Wood-Swallows) together.—C. H. H. JERRARD, Blackdown, Gayndah, Queensland.

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Albatross Death-Trap.—In the April *Emu* (xxv., p. 281) there is an editorial query as to a death-trap alleged to exist on the Australian coast, in which Albatrosses get caught and perish. This is situated on Albatross Island, Bass Strait, and an account will be found, with photos, in Le Souef's *Wild Life in Australia*, pp. 196-8. He says :—"In the centre of the island is a depression with almost perpendicular sides and an exit only through a cave. In the depression we found an Albatross and I tried unsuccessfully to make it fly from the ground.

I then took it to the top of one of the big boulders in the depression and drove it off, but it only fluttered to the ground. I noticed later that when an Albatross came sailing over the island against the wind, and took a downward sweep in passing this depression for the purpose of landing on the colony at the other side, if he went a little too low, he suddenly lost all the wind on which he was relying, and consequently went lower than he intended, and before he could recover himself, came against the cliff and fluttered helplessly to the bottom. He then wasted his strength in trying to climb out, and when exhausted by hunger, apparently went into the entrance of the cave to die, but did not seem to pass through the semi-darkness to get out at the other side. Many hundreds must have died at this place, as there was a large heap of their bones which had been sifted from the guano, and the bones were perfect, not broken. We called this depression the Albatross Death-Trap."—H. STUART DOVE, West Devonport, Tasmania.

[Several other correspondents have written in the same strain as Mr. Dove. Mr. Robert W. Legge (Cullenswood House, Cullenswood, Tasmania), gives this additional note :—" There is a sort of cave, too, which runs back from the bottom, but whether it gives out to the sea I cannot remember. Many years ago, a party of enterprising fishermen landed on the island with the idea of collecting the decayed matter, resulting from the bodies of thousands of Albatrosses. They bagged a large quantity of the stuff, but became weather-bound, and they came very near to losing their lives over the attempt."]

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Five Nests in Five Months.—Second broods are by no means so rare as Mr. J. McGilp, of South Australia, appears to believe. I could enumerate dozens of instances where birds have reared a second family in the same season. The following birds I have observed build a new nest for the second family :—Black-backed Magpie, White-backed Magpie, Pied Butcher-Bird, Grey Butcher-Bird, Lewin's Honey-eater, Yellow-plumed Honey-eater, Black-and-White Fantail, Grey Fantail, Blue Wren, Silvereye and Spotted-sided Finch. The Yellow-tailed Thornbill, White-fronted Chat and Blue Wren used the same nest for the second brood. With the late Mrs. Norton, R.A.O.U., I watched a pair of Blue Wrens for about five months, in which time they built no less than five nests. Whilst pruning a rose bush I came upon the first nest with one egg, but had the branch severed before I noticed it. Their second nest was built in honey-suckle in less than two days, but I did not have a look at the eggs. Ten or twelve days later I saw two naked chicks on the ground, dead, and on looking in the nest saw a young Cuckoo, which turned out to be a Narrow-billed Bronze Cuckoo. Both male and female Wrens fed this interloper until it left the nest. The male bird then saw his mistake (?) and gave up the job of feeding the chick, but often brought an insect to his wife. The hen bird continued to feed the foster-chick until it was able to fend for itself; then, after determined efforts on the part of both birds, they drove it away. In the meantime, the male Wren amused himself by building another nest about 20 feet away, which his wife turned down as unfit to live in, after trying it for a whole day. This nest was not as well built as the others, being shallower and having a larger opening. The hen bird selected a more secluded spot—*i.e.*, eighteen inches above my head where I slept on the verandah, so I had a close view every morning—and built again with very little assistance from her mate, although he sat in the nest a good deal. Three eggs formed the clutch, and when the young were hatched and fully fledged, father Wren again built a new nest; this time Mrs. Wren only helped occasionally. A clutch of eggs appeared in this nest very soon, and the hen did more of the brooding than on previous occasions, her mate being occupied with the earlier brood; but he often found time to give her a tit-bit. In good time the young were hatched, both parents feeding the chicks and sometimes the earlier brood; and when they had left the nest, the earlier family gave a hand with the feeding, for I saw three little gray birds feeding a young one at the same time. These birds were very tame and most of my observing was done at a distance of a couple of feet. I touched the male bird when he was on the nest, and held a young one while the parent fed it.—J. J. DE WARREN, Dungog, N.S.W.

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Food of Sea-Birds.—Although I have had the opportunity of carefully observing Albatrosses on several long sea voyages, I have never seen these birds pick up any natural food from the water. Observation hour after hour, and day after day, has given a negative result. Even when resting on the water they do not appear to feed, though they certainly eat meaty food thrown over from ships. These birds rest on the sea at night, and in the early morning they have been noted floating about. On this evidence it would appear that they feed at night on floating crustacea or fish. It has been shown that deep sea animals come to the higher levels after dark.

The only time I have seen Shearwaters feeding was on the present trip. In Bass Strait great flocks of Short-tailed Shearwaters were seen resting on the sea in the early morning, evidently feeding, as many were ducking under the surface. During the daytime they appear to fly over the sea for hours together without taking anything.

During a visit to Montagu Island, when hundreds of Gulls and Terns were nesting, large flocks of Silver Gulls were seen massed on the surface eagerly feeding on small red shrimps. They appeared to be most busy in the late afternoon.

Gannets obviously feed on fish. During a day's stay on Broughton Island several of these birds were seen diving into a shoal of small garfish.

Terns have been seen to pick up such small fish in a shoal that for any reason turn on their sides and show thus up as a silver gleam in the water. On a voyage from Montagu Island we passed close to a vast shoal of fish, an acre or more in extent; these were evidently being taken by predaceous fish, as the surface was being agitated. Hundreds of Terns, Petrels and Gannets were apparently picking up maimed fish or scraps of fish.

Arctic Skuas generally fly high, apparently taking no interest in the sea ; I have never seen one feeding, and presume that they are night feeders.

20/3/26.—At the present moment there is a Frigate-Bird high in the air, evidently waiting for some work-a-day fisher-bird to rob. We are about 60 miles from Cocos Island.—A. S. LE SOUEF, C.M.Z.S. (Sydney).

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Southern Australian Sea-Birds.—The following notes were made during the homeward voyage of the R.M.S. Otranto, which left Sydney on March 4, 1926. As the first port of call was Hobart a good opportunity was presented to observe a wide stretch of our southern coastal waters.

Storm-Petrel. A few of these dainty little birds were observed in Bass Strait and the Australian Bight. The birds were black with the flanks mottled white, and were provisionally identified as *Fregetta tropica*. The flight of these birds is unlike that of any other sea birds that I have observed. They flit over the surface of the ocean, frequently dipping to pick up something on the surface, and have a habit of swerving at an acute angle to their line of flight.

Wedge-tailed Shearwater (*Puffinus pacificus*). On the first day out from Fremantle hundreds of these birds were flying close to the surface of the water. They were never seen to settle nor could they be seen to pick up anything from the sea. Viewed in the sunlight they had a blackish-brown appearance, with black primaries and darker tail. At night one flew on to the bridge deck ; this was secured identified and skinned, and the specimen will be sent to the Australian Museum.

Short-tailed Shearwater (*Puffinus tenuirostris*). Thousands of Shearwaters, identified as this species, were noted between Sydney and Hobart. On the first day out from Hobart tremendous numbers were seen in the early morning, making out to sea from the coast, and great flocks were resting on the water, evidently feeding on floating crustacea.

Black Petrel (*Procellaria parkinsoni*). One specimen only was noted near Adelaide. The bird had a flapping flight like that of a Silver Gull, and picked up things from the surface of the water without alighting, and often dropped its legs when hovering. In appearance it was intensely black all over.

Prion. Species not identified. Thousands of these dainty little birds were seen flicking over the water in Bass Strait.

Snowy Albatross, (*Diomedia chionoptera*). A few of these noble birds were seen between Hobart and Albany. Careful observation through powerful field glasses did not denote any lines on their white body plumage. One bird, however, was entirely dark brown with the exception of face, bill, throat, and part of the under-surface of the wings.

White-capped Albatross (*Diomedea cauta*). This species appears to have a very restricted habitat : a few were noted in Bass Strait. Their flight is different to that of other species of Albatross noted in that they follow a fairly even course, level with the water, and do not follow the ship.

Black-browed Albatross (*Diomedea melanophrys*). This species was by far the most common of the genus; several birds often followed the ship in Bass Strait. It has a fairly fast flight and often rises high in the air. I estimated its speed at 40 miles an hour.

Yellow-nosed Albatross (*Diomedea chlororhynchas*). This species was seen only in the Australian Bight, its black and yellow bill being a conspicuous feature.

Sooty Albatross (*Phœbetria fusca*). This striking species was scarce, only half a dozen birds being seen in the Bight. The day they were seen there was a strong head wind, and they did not appear to be able to keep up with the ship.

Pacific Gull (*Gabianus pacificus*). A few immature dark-coloured birds were flying about the Hobart harbour.

Skua (*Catharacta lonnbergi*). Odd birds of this species were noted occasionally in Bass Strait. The bird has a slow and rather laboured gull-like flight.

Arctic Skuas (*Stercorarius parasiticus*). Arctic Skuas, both pied and dark forms, were very numerous between Sydney and Hobart. They usually flew high in the air, and did not seem to be searching the ocean surface for food.

Australian Gannet (*Sula serrator*). Rather numerous between Sydney and Hobart. They were frequently seen resting on the water.—A. S. Le Souef, C.M.Z.S.

From Magazines.

Comrades in Adversity.— Bearing on recent notes regarding the destruction of fauna in the disastrous bush fires of Victoria, an interesting little story has come to hand from a friend who lives on the edge of the fire-stricken areas. He relates that a resident of Noogee was lying in a creek with a wet blanket over him and felt someone crawl under the screen alongside him. When the worst of the flames had passed the man turned to speak to his companion. Then, to his amazement and pleasure, he found that his guest was a Lyre-Bird, one of the shyest creatures in the Australian Bush.—From the Nature Notes column of the Sydney *Daily Telegraph*, March 13, 1926.

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Kookaburras' "Humor."— An extraordinary incident, in which two Kookaburras (*Dacelo gigas*) were the chief figures, is reported by the *Sydney Morning Herald* to have occurred at the big Royal Agricultural Show in that city during April. "A delightful bush touch to the Show scenes on Saturday," says the newspaper, "added much to the enjoyment of the thousands massed around the ring. While the voice of the announcer, speaking from the centre of the ring, told in clarion tones the winners of the trotting contest, there suddenly rang out still more stridently a volume of demoniacal laughter. It silenced at once the voice of the announcer standing before his amplifier. Growing ever more frenzied, the laughter rose to a triumphant crescendo before subsiding gradually into a lower key, and, after a few abrupt pauses, it stopped as suddenly as it had commenced. Those who had witnessed the sudden flight of two Kookaburras across the ring, and their subsequent alighting on the box office of the announcer, had the key to the situation. Finding his voice suddenly submerged in the flood of laughter a few feet above his head, the announcer was astute enough to realise that by a strange chance came the opportunity of introducing a novel feature into his rather drab programme of giving the results of ring events. Accordingly he threw wider open his window the better to amplify the 'laughters.' Eventually the birds departed in solemn flight."

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The Song of the Heath-Wren.—There can be no doubt that the lively yet shy little Heath-Wren, *Hylacola pyrrhopygia*—once termed the "Chestnut-rumped Ground-Wren"—is one of the most accomplished of Australian bird-singers and mockers. Yet it is not known to the general public, and every few ornithologists are well acquainted with the species. Here are some notes on the melody of the bird, extracted from an article by Mr. P. A. Gilbert, R.A.O.U., in the *Australian Museum Magazine* for April, 1926 :

"Beginning softly, the song will gradually swell in volume till the air rings with melody. At first it may sound like a full-voiced canary, or it may seem like a polished skylark, till a better understanding convinces you that you have not heard the song before. Listen intently, and as the song moves onward you will probably recognise bird notes similar to some which you have heard before. A beautiful songster appeals even to the most casual listener. What would be his admiration for the rendering of a bird which graciously weaves the songs, calls, and alarm notes of other birds into that of its own sweet song ? The Heath-Wren does this, for he is a song-mimicker of the highest attainments. He begins by singing a few bars of his own song, then with a grace note he carries his movement to the songs to be mimicked, which he renders with great smoothness ; so smoothly in fact that it requires a keen ear to detect the connections. The fantasia of the Heath-Wren is woven with varying intonations of the borrowed songs, first crescendo, then diminuendo, supplementary notes being inserted to preserve the rhythm. sometimes a westerly breeze toys with his song, helping to produce a cadence of entrancing effect ; the next moment a boisterous wind breaks it into tantalising discords.

"Unlike the Lyre-Bird and other feathered imitators which whistle their mimicry, the Heath-Wren sings it, wherein lies its beauty. An accomplished male Heath-Wren was heard to mimic the following birds in one continuous song :—Whip-Bird, Black-faced Cuckoo-Shrike, Yellow-faced Honeyeater, Brown-headed Honeyeater, Brown Thornbill, Yellow-tailed Black Cockatoo, Fantail Cuckoo, Dusky Wood-Swallow, Spinebill, White-naped Honeyeater, Grey Thrush (including the notes of the young bird), Rufous-breasted Whistler, Yellow Robin, Crimson Rosella, and Firetail Finch, in that order. It may be left to those who know all or any of these calls, to imagine the gaiety of this song. The female is also a songstress, very little inferior to her consort ; but it is while she is building her nest that he sings his superb music."

The Curious Bell-Miner.—Australia's two species of Bell-Birds form the subject of an article by Mr. A. H. Chisholm in the *Australian Woman's Mirror* for May 11, 1926. Writing of *Manorhina melanophrys* he says, *inter alia* : " What is it that wonts the Bell-Miners to particular spots no one seems to know. It can scarcely be certain kinds of vegetation or certain kinds of insects, for they will cling to one gully and refuse to have anything to do with just such another a little distance away. Drive them, however inadvertently, from a particular spot near a creek, and the chances are that the whole colony will shake its collective tail and leave the district. I had a note some time ago from a resident of Moruya (N.S.W. South Coast) pointing out that for many years a colony of Bell-Birds had existed in one of the local gullies and inquiring why they did not spread to similar gullies in the neighbourhood. About five years ago, he said, they were heard in an adjoining gully, but only for one day. Recently they invaded the same gully again, and apparently are there to stay. But—mark this—they also invaded other gullies recently, only to leave them again after a few days. Much the same thing has been noted in Queensland, in which State, by the way, some of the books tell you Bell-Miners are not to be found. I have heard them tinkling in the Macpherson Range, near Killarney, and at two places, a few miles apart, in the Brooloo Forest, 100 miles north of Brisbane. One of these places was a village known as Melawondi. As our train paused at the little station the music of the feathered ringers drifted charmingly to the ear, harmonising with the melifluous name of the township. With a few blatant years off my age, what a temptation that would have been to manufacture a ' poem ' to ' The Bell-Birds of Melawondi !'

" It is one thing to hear these bells and another thing to see the fairy ringers. You may be standing in a forest glade with the silvery music floating all about you and yet fail to see one of the ringers, so closely does their general plumage-scheme approximate to the green of the foliage. But the remedy is simple. Make a squeaking noise by kissing your fingers, and in a few seconds ten or a dozen pretty birds will be skimming about your head or performing acrobatic feats on branches a few feet away. A city dweller whom I introduced to Bell-Miners in this manner has not yet got over his amazement and exhilaration at the spontaneity of the birds. I recall, too, an occasion in a Queensland forest when a university professor and a forestry officer lamented that they could not see the feathered ringers whose chiming was floating about us. The vehicle stopped ; a few casual squeaks were made ; and in a twinkling a colony of Bell-Miners were skimming above us or clustering and screeching in the vegetatiog beside the track. One or two clung to tree-trunks after the side-lonn manner of Yellow Robins ; another hung head downwards from a single leaf. It was all very entertaining."

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Save Our Sea-Birds.—In the course of an eloquent article contributed to the *Cairns Post* (North Queensland) of May 14, 1926, Mr. Charles Hedley, F.L.S., Scientific Director of the Great Barrier Reef Committee, makes a strong plea for the birds that frequent " nature's island aviaries," such as Green Island or Oyster Cay.

"These bird islands," he says, "are an amazing spectacle. A visitor is first impressed by the incredible number of the birds. In the distance the flock seems like smoke streaming off from a bush fire; nearer they bring to mind a swarm of bees. Closer, it is as if every leaf in a forest had sprung into life, conjured into a torrent of screaming, darting, soaring birds. The visitor is bewildered, almost stunned, by the myriad wings thrashing the air above and beside him. Overcoming his first surprise, the attention of the newcomer is riveted on the exquisite grace of their movements. With inimitable elegance these fairies of the air wheel, arise or alight. None can outfly or out-manoeuvre them; it is they who are masters of the air.

"In the breeding season, you can scarcely walk across the island without treading on egg or chick. One to each square foot, a glossy black and white bird sits on her eggs. Each different kind is seen to be gathered into a space apart, here noddies, there terns, there boobies.

"The visitor is too apt to presume that such a host of birds is safe from destruction. Where there are so many it seems impossible that they could ever be exterminated. Alas, it is not impossible; it is not improbable. On the contrary, if protection be not given, extermination of these beatuiful and harmless birds is certain—and it is near at hand. The last Australian land seen by many travellers bound to the Orient is Booby Island. This was so named by Cook, because, when it was discovered, the boobies hovered over it in clouds. Now there is none left. Helborn Island, off Bowen, once had a bird population like Oyster Cay. Except the smallest remnant, these have now vanished. Round the coast of Australia, different explorers, each in ignorance of the others' nomenclature, have named more than a dozen islets 'Bird Island.' To-day hardly any of these have a bird left.

"Destruction of the sea birds is proceeding ruthlessly, cruelly, now at Oyster Cay. And by now, I mean May, 1926. Old hands teach the newcomer a cunning trick. If over a few square yards of bird land you destroy every egg, then to-morrow, when the birds have laid again, you may be sure that every egg on the cleared ground is a fresh one. Boatmen gather many kerosene tins full of eggs at each visit; these are sold in Cairns. Even educated visitors, from whom better things might be expected, think it sport to break the eggs, or throw them at one another. Laws have been passed to protect these bird communities. But laws are not effective, unless the people desire that they shall be so. I venture to suggest that the people of Cairns might arrange that Oyster Cay and the neighbouring islets be proclaimed bird sanctuaries, to save the birds from the sad fate that now threatens them."

* * *

Bird-song in New Zealand.—The Song of Dawn, seldom sung on the mainland now, may still be heard on unfrequented islands. Among these are the Poor Knights, about 15 miles from the coast of Whangarei County. Mr. H. Hamilton, a member of the staff of the Dominion Museum, Wellington, heard it there not long ago, in all its exquisite beauty. He does not describe it in detail, perhaps because he feels that it cannot be described adequately. He merely states that it is worth going a long way to hear, a very long way, doubtless. It is the self-same wild melody that fell on Sir Joseph Banks' ears one January morning 156 years ago, when he was on Captain Cook's vessel in Ship Cove, Queen Charlotte Sound. "And in the morning," the unemotional but enraptured scientist wrote in his diary, "we were awakened by the singing of birds. The number was incredible. They seemed to strain their throats in emulation of one another. This wild melody was infinitely superior to any that we have ever heard, of the same kind. It seemed to be like small bells, most exquisitely tuned, and perhaps, the distance and the water between might be no small advantage to the sound."

Most of the early morning melodists on the Poor Knights are Bell-Birds. Pohutukawa trees that shaded Mr. Hamilton's open-air dining-room on the southern island were the home of a family of nesting Bell-Birds. The parents at first were shy and fearful of the intrusion, but in a few days the fledglings were fed at the same time as the intruders dined. The nest was within 4 ft. of the dining table. Although Parakeets have disappeared inexplicably from every part of the mainland, they are even now one of the most conspicuous features of bird life on the Poor Knights, their bright green plumage, picked out with yellow and red, relieving the sombreness of the foliage. "With ceaseless chatter and boundless energy," Mr. Hamilton reports, "they dominate life in the scrub and on the cliffs." Small flocks of them in December search the flower heads of the toe-toe and grasses for seeds. The Swamp-Rail, the ashy-grey Shearwater, for many years rare in collections and until recently with an unknown breeding-place, the Tui, and the native Lark, which frequents rocks on the foreshore, are present on the Poor Knights; and on the Pinnacles south of the Poor Knights there is a colony of Gannets. The Poor Knights were named by Captain Cook, but his reason for selecting this quaint title is not clear. For generations communities of Maoris shared with the birds the islands' loveliness, snaring the birds in the forests, fishing in the waters, and fortifying their villages with stone walls and palisades.—From an article by J. DRUMMOND, F.Z.S., in the *New Zealand Herald* (9/1/26).

Correspondence.

EMUS AND PRICKLY PEAR.

(To the Editor).

Sir.—I am heartily at one with the note, *Emu*, XXV., p. 290, in which the Editor says, " It behoves bird-lovers, and indeed all good Australians, to see that these remarkable birds are not unduly victimised." It is unthinkable that our finest species, the Emu, should have a price put upon its head for a misdemeanour which has never been proved; indeed, the evidence of a careful observer, Mr. R. Macpherson, who has made observations through a number of years, goes far to show that the charge is wholly false.

I trust that the Council of the R.A.O.U. will take the matter up and block this bonus without loss of time, or *Dromæus novæ-hollandiæ* will be going the same way as *diemenensis*, *minor*, and *ater*.

Yours, etc.,

H. STUART DOVE.

West Devonport,
Tasmania.
May 18, 1926.

VALUE OF BIRD-VERSE.

(To the Editor).

Sir,—One of the objects for which the R.A.O.U. was founded was to popularize knowledge of our Australian birds and to create a sympathetic sentiment thereby in their favor. One of the avenues of approach to the public is to give popular lectures on birds. The thing that stirs popular imagination at these lectures is to recite poetic quotations about our birds. In fact, as an almost life-long lecturer, I have found that which appeals mostly to the public is verses on Australian birds. Sentiment thus stirred achieves more than many Acts of Parliament in helping to protect our beautiful Australian avi-forms.

Bearing the foregoing in mind, I suggest that suitable verses about Australasian birds be printed in each issue of *The Emu*. I feel assured that they would be a distinct benefit and would encourage more persons to subscribe to our journal, beside being a welcome addition to the reading matter for those of our members who are not concerned with the scientific aspect of our work. Perchance, some of our members might care to express their views on this innovation.

Yours, etc.,

ARTHUR H. E. MATTINGLEY.

13 Turner St., S. Camberwell,
Melbourne.
May 12, 1926.

Obituary.

Mrs. S. A. WHITE.

Members of the R.A.O.U. will much regret the death of Mrs. Ethel Rosine White, wife of Captain S. A. White, of Wetunga, Fulham, Adelaide, a former President of the Union; the event occurred on May 10 last, after a lingering illness. Deceased, the eldest daughter of Mrs. and the late Samuel Toms, was born at Adelaide and was married there in 1906. She thoroughly associated herself with her husband's field work and went so far as to accompany him on a big trip through the interior, a journey of about 1,600 miles on camels. Apart from private expeditions, Mrs. White frequently attended the annual excursions of R.A.O.U. members, and was always helpful and cheery. One of the Christian names of the deceased lady was commemorated when the beautiful Lilac-crowned Wren was separated by Mathews from the *Malurus* genus and termed *Rosina coronata*.

Mr. G. A. KEARTLAND.

One of the older school of Australian ornithologists, Mr. George Arthur Keartland, died at Melbourne in May, 1926. A compositor by trade (chiefly employed by the Melbourne *Age*) Mr. Keartland was a naturalist by inclination, and held membership in the R.A.O.U. in its earlier years. He was born near Heidelberg, on the Yarra, June 11th 1848, and at an early age had a passion for birds and their ways and was skilful in trapping those he wished to observe. As a member of the Field Naturalists' Club of Victoria, he contributed much of his field information in papers, and frequently led excursions of the club. He was with the expedition to King Island, Bass Strait, Nov. 1887, and to Kent Group three years later. He afterwards became well known for his field notes and specimens collected on the "Horn Expedition to Central Australia," 1894, and on the "Calvert Exploring Expedition in Western Australia," 1896. In the former expedition he procured a new Honey-eater which was named *Ptilotis keartlandi* by A. J. North. In the latter expedition through great privations a valuable collection (birds and eggs) was abandoned in the desert, and two of his comrades—C. F. Wells and G. Jones—perished from thirst.

Mr. Keartland was endowed with a kindly disposition, and specimens and information were always at the disposal of his friends. In the "Special Catalogue No. 1" (*Nests and Eggs*) of the Australian Museum the author, A. J. North, drew largely on G. A. Keartland's first-hand observations. When Sir Malcolm McEachern was returning to Scotland, he acquired the extensive private collection of Mr. Keartland, which the McEachern family eventually donated to the Royal Scottish Museum, Edinburgh where it remains, for all time, the property of the nation.

Mr. H. E. FINCKH.

The many naturalists who have visited the home of Mr. H. E. Finckh, at Mosman, Sydney, will regret to learn that he died at his residence on May 31, after a very brief illness, at the age of 62. Mr. Finckh's acquarium was the best in Australia, and he succeeded in keeping many Australian fish, notably the tropical curiosity, *Periopthalmus kolreuteri*, the " fish that winks and hops." He also had many birds as pets, including some of the few live specimens in Australia of the New Caledonian Kagu (*Rhinochetus jubatus*). These particular Kagus (which are still alive) formed the subject of an article, illustrated by Mr. Finckh's photographs, in *The Emu* more than twenty years ago (Vol. IV., pl., XII, 1905).

Mr. J. W. ISRAEL.

The sympathy of members of the R.A.O.U. is accorded Mrs. J. W. Israel, of Melbourne, an old member and a regular attender at annual camps, on the death of her husband, which occurred at Melbourne on May 30. Mr. Israel was the Auditor-General for the Commonwealth of Australia, and the value set upon his services was indicated by the fact that he was retained in the position much beyond the retiring age. He practically died " in harness," at the age of 75 years. The exigencies of his office prevented Mr. Israel being closely associated with ornithology, but he sometimes attended meetings. Members who made the trip to Stradbroke Island during the congress of 1919 will remember how Mr. Israel enlivened the company with his wit and humour.

Mr. ISAAC DE LANY.

An old naturalist who passed away in Victoria during May last was Mr. Isaac William De Lany. A keen nature-lover, he was, however, of a retiring disposition and did not pass on his field knowledge, save such as was in letters to friends, or that mentioned in A. J. Campbell's *Nests and Eggs of Australian Birds*. Of later years he became a member of the R.A.O.U. Mr. De Lany was born at Windsor, Victoria, sixty-one years ago ; he was educated at Wesley College and afterwards settled in the timbered tracts of Gippsland. In carving a home (for farming and grazing) in the virgin bush in those early days, he enjoyed ample opportunity to study bird life. As expected, he devoted much time to Lyre-Birds, and he differed from the majority of observers by insisting that these birds were not such wonderful mimics, but acquired their remarkably varied voice from heredity.

Mr. E. C. OSBORNE.

The death at Cardinia, Victoria, on March 25 last, of Mr. Ernest Charles Osborne deprived the R.A.O.U. of a staunch member. Mr.

Osborne had served with the Australian forces in the Great War, and he never fully recovered from wounds received in action. By profession a solicitor, he was held in high esteem among the residents of his district.

Mr. W. L. MAY.

Members of the R.A.O.U. much regret the death of Mr. William Lewis May, of "Maydena," Sandford, Tasmania, one of the original members of the Union.

Our late member passed away at a private hospital in Sydney on August 30th last, on his homeward journey from a health trip to Fiji and Samoa. He was born of Quaker parents, in 1861, at Wanstead, South Australia, his home being a farm adjoining the belt of Mallee that borders the River Murray. In 1874, his father, William May, and family removed to Tasmania, and W. L. May with his brothers built up the well-known orchardists' business of May Brothers.

The late W. L. May from boyhood was keenly interested in natural history, and early made water-colour paintings of the birds of his locality. Subsequently, he and his brothers built a yacht, which enabled him to dredge and pursue the study of conchology, in which science he became an authority. A number of his papers on Tasmanian conchology have been published by various scientific societies and the Tasmanian Government. His last collecting trip was with Mr. Edwin Ashby, a relative, to Robbin Island, North West Tasmania, in November, 1924. One who intimately knew our late member, states: "His uprightness of life and conduct and his hospitable kindness constituted a valuable influence in the district where he lived."

Reviews.

Dr. PHILLIPS ON DUCKS.

[" A Natural History of the Ducks "—By John C. Phillips, Museum of Comparative Zoology, Harvard College, U.S.A. Published by Houghton Mifflin Co.]

Previous volumes of Dr. Phillips' important work have been reviewed in *The Emu*, Vol. XXIV., pp. 78-9, and Vol. XXV, p. 306, and now the fourth and final volume has been received from the author. It is indeed a great accomplishment to have given to the world such a complete history of the birds of a single Order and an Order so interesting as "The Ducks."

The chief interest to Australians, in Vol. IV., is the sub-family *Oxyurinæ* which contains the Blue-billed Duck (*Oxyura australis*) and The Musk Duck (*Biziura lobata*), while in the larger Australian region there are the unique Salvadori's Duck (*Salvadorina waigineusis*) of New Guinea, and the beautiful Blue Duck (*Hymenolaimus malaco-*

rhynchos) of New Zealand, both in the sub-family *Merganettinæ*, and the Auckland Islands Merganser (*Mergus australis*) in the sub-family *Merginæ*.

The Blue-billed Duck claims "cousinship" with the Ruddy Ducks of America. Regarding its general habits the author quotes Mr. Charles Barrett's succinct remarks :—" It is generally considered a rare bird, but in some localities appears to be fairly numerous. Though it is rarely seen on the wing, when the need arises it can fly rapidly and it makes rather long journeys, apparently at night. It has been observed on waterholes, far from any other suited to its needs, remaining only for a day or two." The voice of the Blue-billed Duck has never been described. The aborigines informed Gould that " it has no voice but makes a noise with its heart," which noise, Dr. Phillips suggests, refers to the drumming, or bill-tapping sound of the male's display. The clutch of eggs is irregular, as in other Ruddy Ducks, " averaging probably five or six," Dr. Phillips believes.

The Musk Duck is one of the most remarkable and aberrant of all Ducks and much remains to be learned about it. It has one of the most interesting and complicated displays of any Duck. The striking display of the male has many times been described by field observers, yet probably not correctly because details seem uncertain. Dr. Phillips apprehends that the display is chiefly characterised by the turning of the tail-feathers well over the back and extending them fanwise. Then, at frequent short intervals, the male shoots one (or both) of his feet directly backwards, which causes a shower of water to be forced out behind, three or four feet or more. At the same time the head is thrown back and by simultaneous movements thrust forward to the surface of the water, but apparently not under it. The exact sequence of all these movements is not at all clear nor is it certain whether the foot thrust is alternate or simultaneous. It is equally uncertain what actually produces the resounding " plonk " or " ponk," which accompanies the foot and the head movements. Some observers think this sound vocal, but others attribute it to the foot-thrust, or slaps of the tail on the water. A. W. Milligan states that the male makes the noise whilst " immersing " the head. The thrusting down to (or is it under ?) the water appears to be simultaneous with the foot thrust and the swishing of the tail. Another peculiarity about this Duck is the strong, musky odour which the male emits, the source of which has not yet been determined. One early explorer said the smell was "intolerable " and that it " scented nearly the whole ship."

The nidification of the Blue-billed and Musk Ducks is similar, and the uncertainty of the number of eggs to the respective clutches is owing (the reviewer believes) to the wrong identification of the parents.

Salvadori's, or the New Guinea Duck, is the last brought to light. It is perhaps the most interesting of the peculiar anatine birds of the world and is still practically unknown. Dr. Phillips states : "It resembles in a superficial way the curious Torrent Ducks of South America." The late C. W. De Vis, of Queensland, described its eggs.

The volumes are fine examples of modern printing and binding, and the colour plates are of the highest quality. Few members of the Union may be able to possess such monographs as Dr. Phillips' "Ducks" and William Beebes' "Pheasants," but very generous gifts have made these and other works available in the Union library.

MIGRATION PROBLEMS.

["Problems of Bird-Migration," by A. Landsborough Thomson, O.B.E., M.A., D.Sc. Published by H. F. and G. Witherby, London. 18/– net.]

This book aims at a statement of the problems presented by the phenomenon of bird-migration, rather than an attempt, admittedly hopeless in the present state of knowledge, at their solution. Such problems, it is pointed out, have a wide importance from the point of view of biological theory, migration in birds providing one of the most remarkable examples of animal behaviour ; at the same time they are of great interest to all observers and lovers of nature, to whom the facts which they concern come each year as an undiminished wonder.

In order that the special problem of avian migration may be seen in its true perspective, Dr. Thomson gives, by way of introduction, a brief review of the migratory phenomena found in the animal kingdom as a whole. Following this, the main substance of the book falls naturally into three parts. Firstly, there is an outline of the principal known facts. Secondly, there are some more detailed studies by way of illustrative example. Thirdly, there are the statement and discussion of the main theoretical problems. In dealing with such an extensive subject the author has of necessity aimed at generalisation and example rather than at completeness of detail. Stress is laid on the success of the marking method, which has been considerably followed in Britain and America but very little utilised in Australia.

Indeed, it would seem from this book—a thorough and generally very comprehensive study of the broad subject—that Australia has had little or nothing to contribute to the facts of the matter or to the solution of the multifarious problems attending those facts ; not one Australian ornithologist is quoted in the scores of references in the book, and the only allusions to Australian avi-fauna are one or two brief generalities and a statement that "The Welcome Swallow (*Hirundo neoxena*) is the herald of summer in Tasmania in the same way that our own Swallow (*H. rustica*) is in Britain." Perhaps the inferential suggestion that local ornithologists have had nothing noteworthy to chronicle on the topic of migration is largely justified —certainly the work here has not been striking. But the files of *The Emu* and kindred publications in Australia would surely have repaid critical search. One paper, for instance, that would have provided the author with interesting matter is that by the late Kendal Broadbent "On the Migration of Birds at the Cape York Peninsula" (Proc. Roy. Soc. Q'land, Vol. I, p. 93, 1884). It seems probable that after study of this paper (and of others touching the co-relation of the vegetation of northern Queensland and New Guinea), Dr. Thomson would have hesitated before suggesting that migration occurs among native tropical birds chiefly in regions where there are neighbouring areas of very diverse character in which the incidence of wet and dry seasons has different effects." It may be added incidentally that this question of tropical migration is a little "sub-department" of its own, so to say, and one of close interest to Australians in respect of *Aplonis*, *Myristicivora*, *Tanysiptera*, and several other genera or species.

Aside from this matter of Australia's part, Dr. Landsborough Thomson has achieved an extremely valuable and fascinating book, one that comes close to being the definite authority on bird-migration in out present state of knowledge. Perhaps he is most interesting of all when discussing the ends served by migration, the originating cause of the migration custom, factors determining the path and goal of migration, etc. Each of these subjects is too extensive to be discussed here, but it may be observed that some stimulating theories are adduced with facts as a basis, and that the author is discreet rather than dogmatic—he submits his theories more or less tentatively and does not attempt to force facts to breaking-point.

Two other publications received for review are Part II. of J. D. D. La Touche's "Handbook of the Birds of Eastern China" (Taylor and Francis, London), and the twentyfifth number of W. L. Sclater's very useful Zoological Record. Mr. La Touche treats his birds concisely yet thoroughly. A description of the species is followed by records of distribution, notes on nests and eggs, and a few informative remarks on habits and behaviour. Mr. Sclater's little volume (one of the series published by the Zoological Society of London) is by way of being an index to the recent ornithological literature of the world, and in that sense is valuable to all ornithologists. All articles in *The Emu*, as well as those of other leading journals of the kind, are indexed under their authors' names.

Welfare of the R.A.O.U.

At the request of Mr. Charles Barrett, C.M.Z.S., and six other members of the R.A.O.U., a special meeting of Melbourne members of the Council was held on April 28 with a view to discussing various matters appertaining to the welfare of the Union.

Mr. Barrett explained that the mission of the deputation was to request the Council to increase its activities in bird protection. He urged that the Council should strongly discourage members and the public from collecting eggs and skins of birds. These remarks were supported by Mr. J. Menzies, who maintained that bird protection should be the main object of the Union, and that its members should speak more to the public on the value of bird life.

Mr. A. H. E. Mattingley replied to some of Mr. Menzies' statements.

Mr. R. T. Littlejohns explained that the reason for the Town Planning Association taking action in bird protection was probably due to the Union not doing its share. He urged that action should be taken immediately for the abolition of trap-shooting of Galahs.

Mr. S. A. Lawrence stated that dissatisfaction had been caused among some members in other States through the Council not doing its utmost to spread knowledge on the essentials of bird protection. He also urged that more publicity on protection should be given in the newspapers. To this suggestion the acting press correspondent, Mr. F. E. Howe, replied that he had experienced much difficulty in getting notes inserted in the Melbourne newspapers.

Pleasure at meeting the deputation was expressed by Mr. A. J. Campbell, who stated that for forty-one years he had contributed articles to various journals, advocating better protection for birds. He recounted briefly the good work accomplished by the Union since its inception in 1901.

The Chairman, Mr. J. A. Ross, claimed that, having in mind the small staff of the Fisheries and Game Department it was doing excellent work. To make the suppression of destruction more effective a greater number of paid inspectors would be required.

Mr. Menzies asked that the Council support a request he had made for the protection during the breeding season of the following birds :—Blue Mountain Lorikeet, White Cockatoo, Wattle-Bird, Rosella-Parrot and Galah. At its next meeting the Council endorsed Mr. Menzies' action, and the Hon Secretary was requested to bring under the notice of the Government the Council's disapproval of the use of Galahs for trap-shooting.—D. DICKISON, *General Secretary.*

[It should be pointed out that, although the above report is necessarily brief, discussion at the meeting referred to seems to have been almost entirely occupied with Victorian affairs, as distinct from those of the R.A.O.U. generally. The "round robin" which caused the holding of the meeting asked for discussion on "several matters regarding which there appears to be widespread dissatisfaction," and through which "the future of the Union may be endangered." It can scarcely be suggested that the future of the Union is involved in whether or not Melbourne newspapers accept the acting press correspondent's reports, and whether or not the Fisheries and Game Department (Victoria) is efficient. Presumably, Mr. Menzies' plea for protection of the birds named also applies only to Victoria. Further, it is to be assumed that the protest against allegedly insufficient Council activity in bird protection was directed only to headquarters to apply such criticism to Council members generally would be unfair, in view of the fact that some of them in various States have done, and are doing, valuable work in the conservation of native birds.—EDITOR.]

Stocks of "The Emu."

FIFTEEN years ago the Hon. Librarian of the Union published a list of the number of back parts of *The Emu* in stock. Since then a steady demand by members and overseas institutions has considerably reduced the parts in many of the early volumes. As a result of a recent tally, it was found that the following numbers are still in stock, together with 62 copies of the Index, Vols. 1 to 20.

Volume	Part 1	Part 2	Part 3	Part 4	Part 5	Supplement.
1	*	*	*	...	...	...
2	*	*	1	*	...	...
3	1	4	1	1	...	...
4	82	79	72	65	...	...
5	63	65	65	78	...	87
6	68	66	60	64	...	...
7	47	49	64	76	...	87
8	48	41	26	34	...	4
9	32	16	5	18	...	...
10	*	1	67	39	39	...
11	120	132	132	127	...	...
12	132	121	103	108	...	39
13	94	94	96	110	...	...
14	93	108	101	109	...	...
15	100	118	150	148	...	...
16	119	125	148	135	...	...
17	86	116	66	114	...	...
18	76	74	76	80	...	...
19	16	25	42	27	...	...
20	1	7	8	2	...	...
21	25	29	33	34	...	...
22	10	15	20	22	...	...
23	*	*	23	23	...	...
24	*	*	18	40	...	...
25	44	55	58	61	...	...

*Out of print.

Members may obtain any of the above parts at the following fixed rates, but early application to the General Secretary is necessary for those parts of which only a few copies remain:—Parts of which under 10 copies are held, 10/- each; over 10 and under 25 copies held, 6/- each; over 25 and under 40 copies held, 4/- each; over 40 and under 50 copies held, 3/- each; over 50 copies held, 2/- each. Index to Vols. 1-20, 15/-.

Notes and Comments.

Members are reminded that subscriptions for the current year are due, and should be forwarded to the Hon. Treasurer, 376 Flinders-st., Melbourne.

The annual Congress of the R.A.O.U. is to be held at Sydney during October next, the tentative opening date being October 18. Important matters are listed for discussion, and it is hoped that members in all the States will make every effort to attend. Following the Congress (the business of which will be interspersed with outings in and about Sydney,) a camp will be held on the Williams River, in the vicinity of the picturesque Barrington Tops. This is an interesting locality for naturalists, providing as it does the southern limit of several sub-tropical birds.

The attention of members is directed to Rule 31 of the R.A.O.U., as follows :—" Each candidate for membership of the Council shall be nominated by two members of the Union, and the names of all such candidates, together with the names of their nominees, shall reach the secretary at least 28 days before the annual general meeting. All such nominations shall where practicable be accompanied by the consent in writing of the candidates proposed."

Rule 56 of the R.A.O.U., states :—" Any member who is desirous of bringing forward any business for consideration at any annual general meeting shall forward to the secretary not later than the first day of the month of August immediately preceding such meeting, a notice in writing, signed by himself and one other member as seconder, stating in concise terms the motion or motions he wishes to move, and the Council shall cause such notice of motion or motions, together with the names of the proposer and seconder, to be included in the circular summoning the meeting."

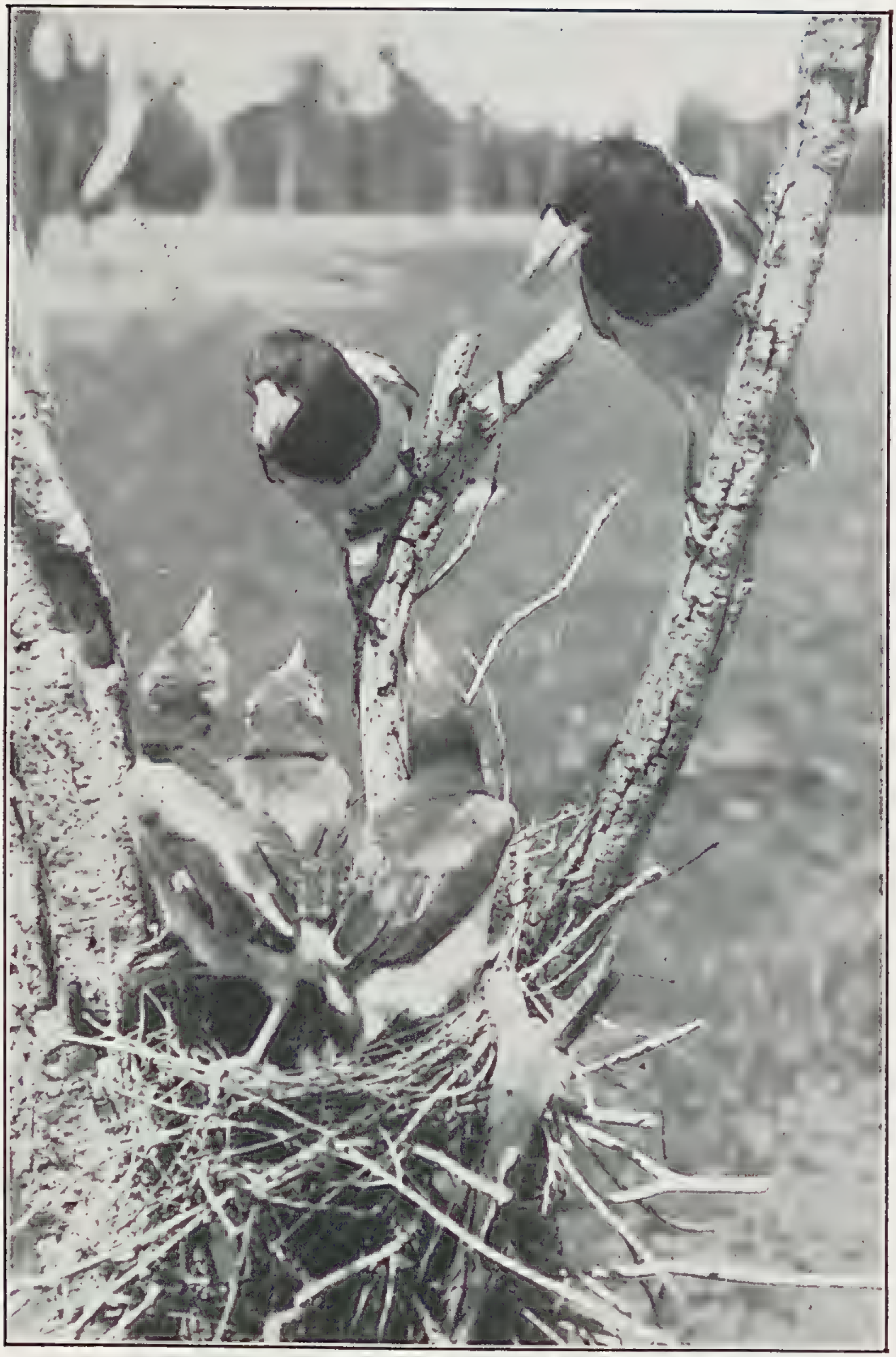
At a conversazione of Melbourne members of the Union held at the National Museum on May 5, 1926, the following resolution was carried on the motion of Messrs. A. G. Campbell and A. H. E. Mattingley :— " This meeting is of opinion that the Council should invite applications for the formation of branch committees under article 26, and from any part of Australia ; such briefly to outline their proposals, and that this matter be given a prominent place in the business of next session."

Messrs H. F. & G. Witherby will publish shortly a work by Dr. Hopkinson, M.B.O.U., entitled *Record of Birds bred in Captivity*, at which he has been working during his leave from service in West Africa. The work records the successful breeding of more than 800 species of birds and about the same number of hybrids.

Mr. Otho Webb, R.A.O.U., of "Wahroonga," Darr Creek, via Jandowae, Queensland, who has taken some notable photographs of wild birds, now offers for sale his photographic outfit. It comprises four high-class cameras equipped with six super-quality lenses by the well-known makers, Ross, Aldis, Voigtlander, Wollensak, Carl Zeiss and Planbel, giving a very complete range of focal lengths of from 2″-52″. The cameras are exceptionally well supplied with accessories and are all in good condition. The placing on the market of this outfit, which cost over £130, offers a wonderful opportunity to anyone desirous of securing a photographic equipment capable of undertaking every branch of nature-photography. Price £65. Mr. Webb would also like to hear from anyone interested in the purchase of the original negatives of his collection of nature-studies, consisting almost solely of those of bird-life.

NATIONAL MUSEUM MELBOURNE

NATIONAL MUSEUM MELBOURNE



PAIR OF BLACK-THROATED BUTCHER-BIRDS
(*Cracticus nigrogularis*) AND YOUNG

A splendid study by Mr. O. Webb, R.A.O.U., Jandowae, Queensland. (See also Plate 20).

The Emu

OFFICIAL ORGAN OF THE
ROYAL AUSTRALASIAN ORNITHOLOGISTS' UNION

"Birds of a Feather."

Vol. XXVI.] OCTOBER, 1926. [Part 2.

Habits of the Boobook Owl.

By David H. Fleay, R.A.O.U., Ballarat, Victoria.

(*With Illustrations by the Author*).

In a recent number of *The Emu*, Vol. 25, pp. 91-93, I wrote an illustrated paper regarding the Boobook Owl and Tawny Frogmouth, with special reference to their various call-notes. I now propose to set forth some of the habits of the Boobook Owl (*Ninox boobook*).

This often-heard nocturnal vocalist is at home on our plains, our hills, and in our wide stretches of bushland. It is doubtful whether there is any more characteristic call than the clear "Mopoke!" of the Boobook Owl in the night-time of Australian wilds.

I have been most fortunate in observing these birds at close range in captivity; for not only are they satisfied with their lot, but delighted me in the season 1925 by laying eggs and rearing two healthy young ones. They are kept as near as possible to the conditions of their natural life of the open, and each day I manage to trap a fair number of sparrows, upon which prey and occasional mice the Owls thrive well indeed. It appears that to live for any length of time they must subsist on prey such as small birds, mammals and insects; so that the small pellets of bone and fur are constantly being ejected. If for any time without this food and living on raw meat only, the Owls swallow small quantities of bark, this action giving rise once more to the usual ejection of pellets, though naturally of a different kind.

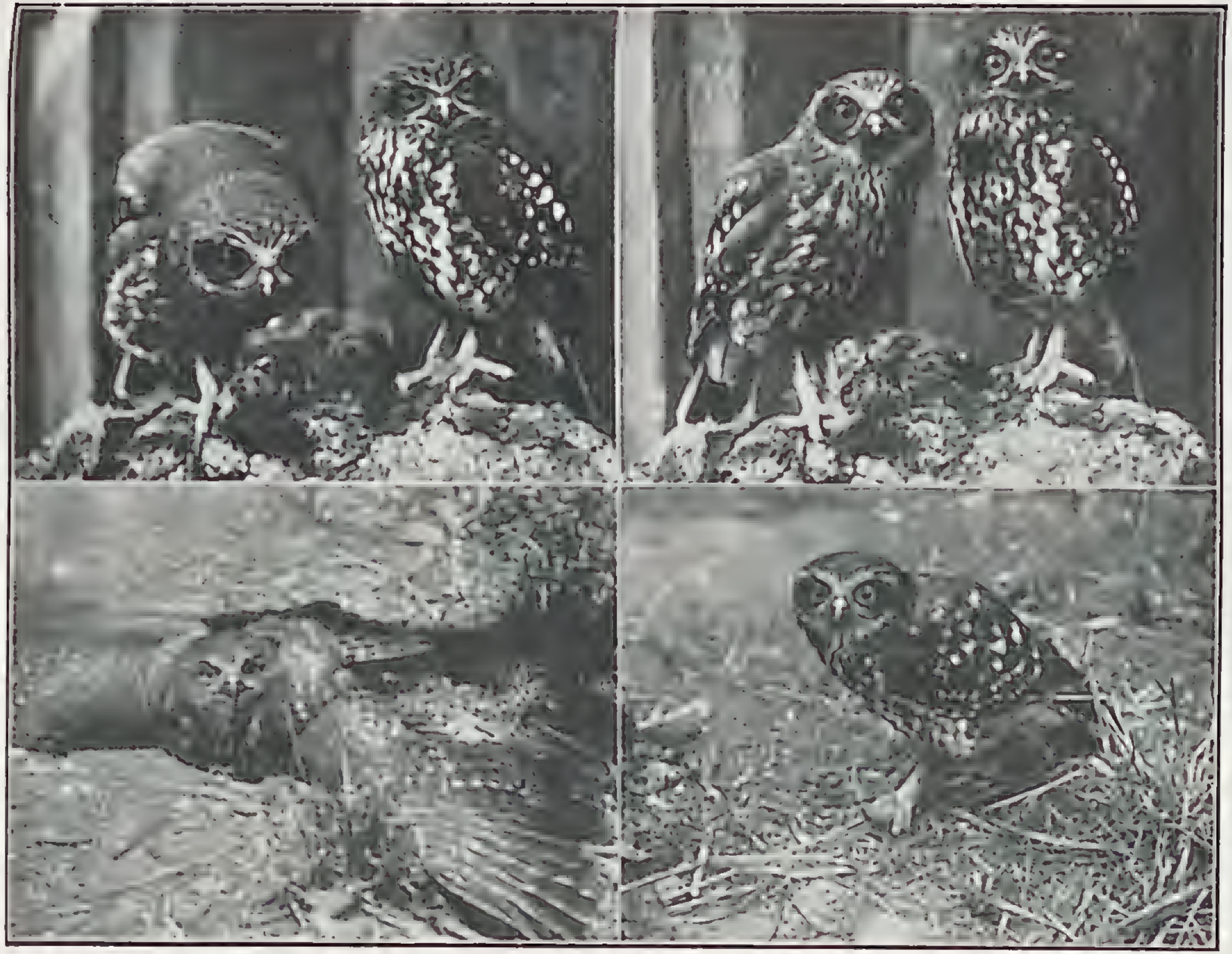
To watch an Owl preparing to disgorge one of these small objects is very entertaining. His eyes take on an expression which reminds one of a Chinese, he yawns repeatedly, and finally loses the small pellet containing perhaps the finely broken bones from the sparrow upon which he made his last meal.

The large wire-netting structure in which the Owls live encloses a silver-wattle tree and part of an apple-tree. In one corner stands a dead pine-tree which serves the Owls as a dark, warm retreat during the cold winter months of Ballarat, for that season is severe in these parts. In the summer-time the birds usually pass the day asleep, perched in the boughs of the silver wattle. Although there are several hollows and boxes arranged after the manner of hollow trees in the enclosure, I have never known the birds to frequent these secluded places during daylight, save in the breeding season. They prefer always, even in bitter weather, to perch in a tree of moderate shade and in the forest. I have invariably found this species of Owl spending the day in branches of the pretty native cherry trees, also taking advantage of the plantations of introduced pines.

Naturally, unlike the Delicate or Barn Owl, the coloration of the hardy Boobook's plumage lends itself to an inconspicuous open life; and, again, the Boobook Owl has a protective attitude, which, though not so wonderful as that of the Frogmouth, is somewhat similar. On the approach of danger the Owl draws itself up stiffly, the feathers are drawn closely to the body, the incomplete facial disc contracts, and you may well imagine that a slim brown stick is regarding you from the spot previously occupied by a Boobook Owl. I have endeavoured several times to photograph this position, but on each occasion the birds have discarded it too soon. I once witnessed them assume it on the approach of a gaily-dressed lady—they are not used to such extraordinary sights, and evidently considered that some danger was approaching.

The Boobook Owl, or for that matter any species of Owl, which makes itself conspicuous by movement during the day, is frequently unmercifully mobbed by smaller birds, and I have noted that one of the most daring attackers is the White-eared Honeyeater. Of course, on the wide plains, with their occasional hollow trees, the Boobook Owl is forced to make the latter his habitations, and the birds are frequently flushed from such positions when an observer clambers up the tree-trunk. On the other hand, in forest country, where the Boobook Owls frequent such trees as the "native cherry," they are seldom seen in these pretty trees; for on the appearance of man they silently leave their positions for a safer haven.

Sometimes the enclosure occupied by my Owls is visited by young and foolish sparrows and starlings; but no sooner do these unfortunates enter the netting than a brown flash with the speed of lightning and noiselessness of night seizes one of them in strong, cruel talons—carrying the victim back to a convenient bough, where the spine below the skull is broken, the body semi-plucked and then deposited in a convenient "hide" for further use. The parents of these luckless young birds create a distressed clamour and I am usually aware of what is going on. Starlings, however, are not relished, and as a rule the Owls do little more than kill them. The judgment and skill of the Boobook Owl in capturing night-flying moths and insects are admirable. Often, during either the day or night, I have but to throw the body of a mouse high into the air to observe the same tactics. An Owl swiftly flies out and



Boobook Owls: top left, Eating a Sparrow; top right, Males Surprised and Interested; bottom left, Sun-bathing; bottom right, Owl Pounces on a Mouse.

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either grasps the mouse in his talons as it falls, or, turning completely upside down, intercepts the rodent before it reaches the ground, and then returns gracefully to his perch. Each day, at dawn, all the Owls indulge in a bath, and they seem thoroughly to enjoy it, even on the coldest of days. I have even known them when vigorously fluttering in the water to give vent to a wavering scream.

There are five adult birds in the enclosure. Two of them are females and the other three male birds. The female birds are larger and sturdier, but the plumage of the sexes is much alike, though each individual bird is characterised by a different mottling and varied fulvous streaking of the under surface. Also, after the summer moult each individual Owl dons a varied mottling from that of the previous season. As far as I have seen, the plumage becomes handsomer each year, and whereas the irises of the male birds' eyes have a greyish tint, those of the females are quite green.

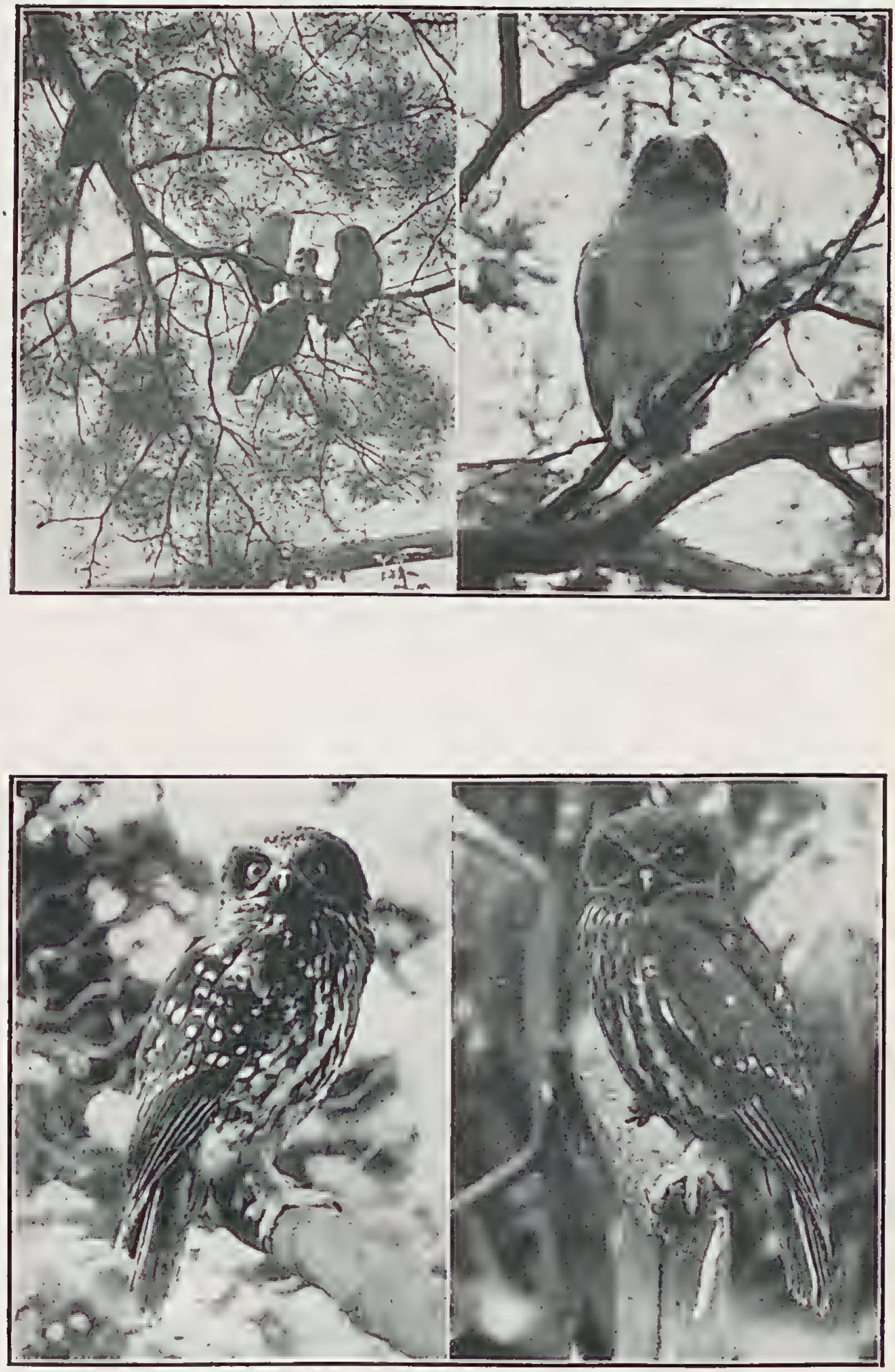
Young Boobook Owls in the wild state are generally hatched from the eggs at the beginning or during the month of November, and there is but the one brood of two or three Owlets for the year, though occasionally some untoward accident causes the parent birds to rear a late family. The young Owls lose their downy breasts and general fluffy appearance completely at the age of three months, the mottled brown plumage taking its place. The young male birds are characterized from perhaps three weeks of age by a lightness of plumage, whereas the young female is darker in color. The voice of the baby Owl is a gentle, trilling whistle, and this is retained until the bird reaches the age of nearly five months. The voice then deepens and becomes a trilling call of much lower tone. The young Owl is capable now of giving vent to the peculiar staccato notes which resemble a succession of " Por-por-por-pors ! " or " More-more-more-mores ! " just as it strikes the fancy. The young birds also call " Whoo-whoo-whoo ! " which gradually merges as they become older into a sharp, well-defined " Wow ! wow ! wow ! " This peculiar cry is given eight or nine times by the respective birds, especially during winter. It is very striking and quite cat-like, and is more frequently used by the female birds. Finally, late in July, the young birds of the previous season for the first time begin to use the " Mopoke " call. In the wild state, of course, they may give vent to the cry earlier, but I have never known my birds to do so. This period is previous to the pairing season of August and September.

I have now traced briefly the stages I have taken note of, for three years, regarding the development of the young Boobook Owl. Whereas the young birds from July onwards commence their characteristic nocturnal " Mopoke " calls, the adult birds one and all redouble their usual vocal efforts, especially the males. Here another point arises concerning this call. In every case which I have had under observation the " Mopoke ! " of the male bird is quicker, clearer and shorter than that of the female. The latter, previous to the mating season, calls regularly at different times of the night in answer to the male bird, and her call is given in a lower key, with more deliberateness and expression—you might almost describe it as a hoarser call. But each individual Owl has a style of his own in the nocturnal vocalism ; and, listening to the calls when camped in the wilds, I have usually thought that I could discriminate between the male and female Boobook Owls.

Some years ago a dilapidated Boobook was given to me. Its health was impaired. Having been kept in a small cage for some time the poor bird had injured its upper mandible repeatedly by beating at night against the cage-wire. Not long after I received the Owl its upper beak from a point just below the nostrils rotted completely off. It was only through feeding the unfortunate bird on pieces of meat small enough for immediate swallowing that it slowly recovered strength. The Owl, a female, constantly rubbed her stub of a beak against the branches at night, and gradually the mandible grew, resuming its normal length some months later. It was then somewhat thickened. Last season (1925) the male bird mentioned in my previous article as having lost his brooding mate the season before, paired off with the hen Owl just mentioned. After the falling of night, throughout August, the male would fly to a branch near the hen Owl and softly start on the " Por-por-por ! " notes. Without exaggeration he would keep this up in monotonous staccato fashion for two and three hundred times—sometimes raising the tone sharply or dropping back into the quiet monotone. Then the female bird would come right up to him, gently fondle his feathers, and call repeatedly in the trilling, low-toned note. Then the male Boobook would raise his voice, and, sitting beside his lady-love, call " Mopoke, mopoke, mopoke ! " in a voice vibrating with happiness. Each night at moonrise there came a regular chorus from the birds, and often at this time I have seen a pair of visiting Owls noiselessly float overhead, to perch in a nearby tree, adding a staccato chorus of greeting " Por-pors," to the already loud chorus of " Mopoke ! "

During this pre-nesting period the male Boobook gave vent to another note, or rather to that which was in reality a screaming call. It is the trilling, low-toned note which the Owls usually make use of among themselves and to me as a friend, emitted in a high-pitched tone. It is quite distinct from that scream given forth by two of the birds which probably quarrel over a sparrow or mouse, or used again when a Boobook Owl in his wild state is caught. But this first-mentioned scream is used in a similar though modified fashion by the fledgling Owls when hungry.

The site picked by the two Owls for a home was a box which I had arranged after the natural manner of a tree-hollow, the floor being littered with bark. I have seen several nurseries of Boobook Owls in the bush situated in hollows and spouts heavily padded with ancient nests of ringtailed opossums. From the middle of September the male Owl frequented this man-made hollow each night. He usually flew straight in at dusk, and the " Por-por " notes would be heard issuing in a muffled tone. The female sometimes flew in also, but the work of preparing the hollow for eggs



BOOBOOK OWLS: TOP LEFT, IN THE WATTLE-TREE; TOP RIGHT, AT 7 WEEKS THEY SLEPT IN THE TREES; BOTTOM LEFT, FEMALE PARENT, SHOWING ANXIETY; BOTTOM RIGHT, "AS SOLEMN AS AN OWL."

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was almost entirely done by the male bird. He tore and shredded the bark into soft fibrous material with the aid of his strong talons and sharp, hooked beak. Then, lying flat, he would scrape rapidly with alternate feet, creating a clear, bare space, which met with approving "Por-pors" from the hen. Each night the scratching sound was audible as the Owl industriously repeated his nightly performance. The female bird took to the nest on 27th September, and from then on she passed the day in the hollow. Her first egg was laid on 30th September. The next egg was laid, I think, a day or two later—of the interval I am not sure, but she sat closely from the first on the large, rounded eggs in her comfortable home, and was very attentively looked after not only by her mate but by the three other Owls living in the enclosure. During daylight the male bird often flew up to the hollow with a sparrow in his talons, leaving it there for the use of his brooding mate. Strangely enough, the other female Owl (a bird in her first year), showed every inclination of helping the sitting bird to incubate her eggs. Though I was apprehensive at first as to this happening, it proved most fortunate, for nine days from the time of sitting the brooding Owl became very ill. The cause may have been strain and insufficient exercise; in any case, she left the hollow and fell to the ground below. Happily, it was but a passing phase, though at the time I thought all hope was lost. Some two or three hours passed, and during this time the other female covered the deserted eggs, keeping them warm. This opportune act saved the situation, for the owner of the eggs resumed her brooding as usual and had no return of the unfortunate sickness.

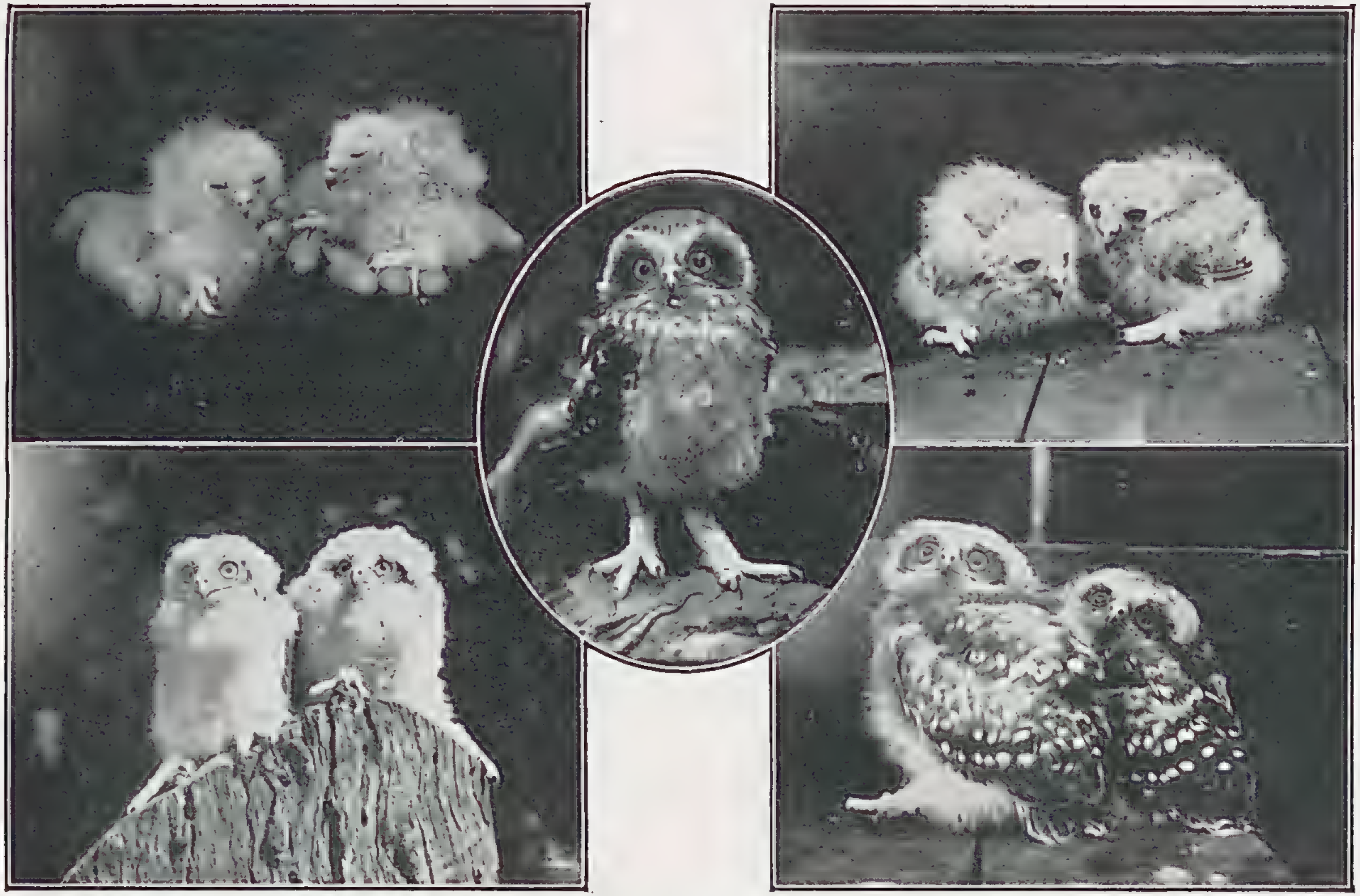
The male bird and his three comrades fed her constantly and regularly with moths, raw meat, mice, and sparrows. She sat steadily on, the only time, as far as I know, that she left the hollow being just at dusk; and on the average she stayed away from the eggs as long as half an hour. On warm nights she indulged in a bath. A fortnight passed, and during this time another pair of the Owls, which had been courting for some time, had prepared a different hollow, and the female—the same bird which had saved the eggs during the illness of the first brooding Owl—was already sitting on two big eggs of her own. This left but one odd bird, a male, but he was as attentive as either of the other two males in looking after the sitting birds. They called "Mopoke!" very frequently at night, and often gave vent to the call in broad daylight after capturing a sparrow—obviously from sheer delight. Again, at night, they gave long effusions of the "Por-por" notes, and on taking a moth or other insect into either of the hollows were received by the sitting Owls with slow, deliberate "Por-pors" of appreciation—for in this call again the female is much more deliberate.

Three weeks passed, and I was disappointed, thinking that after all no young birds would hatch from the eggs of the Owl which had been brooding for that time. However, she sat contentedly on, only leaving her treasures each evening for the regulation half hour. Four weeks passed, and I was almost abandoning hope. Then, on 1st November (thirty-three days from the laying of the first egg) two very small Owlets were hatched. They were blind, covered with white down, and carried a prominent egg-breaker on the tiny, hook-shaped beaks. From this time on for one whole week I do not think the mother Owl left the hollow once. She remained with her young ones the whole time, whilst the other Owls supplied her with moths and other dainty Owl-food. The other brooding female when she quitted her eggs each evening was as industrious as any of the other Owls in collecting for the newly-hatched Owlets, and I am afraid that their arrival upset her own chances of hatching young ones ; for every night she spent more and more time away from her eggs with the other Owls' young ones. Sufficient to say that she brooded in this interrupted fashion for five weeks and a few days, at the end of which time she suddenly left her eggs and deserted them for ever, becoming as much the owner and protector of the Owlets as the real mother herself. On breaking the unsuccessful eggs I found one young one dead at the hatching stage and an embryo chick in the other egg, dead at perhaps a fortnight's development.

When photographing the young Owls at the age of seven days, I was amazed to see the collection of moths, beetles and other food which had been put by in a corner of the hollow. From the day of hatching, the Owlets were capable of a feeble, trilling note, and when handled at the age of seven days they made attempts to receive food from one's fingers, imagining—for they were still blind—that their parents were awakening them for a meal. The two downy white chicks were treasured by all the adult birds, and woe betide any intruder ! A tame ringtailed opossum, which had a habit of promenading round the high framework of the enclosure each night with her young ones, was savagely attacked by the Owls below, and she wisely gave up her gambols in that particular direction. The female Owls, which previous to the nesting season were remarkably tame, attacked me most unmercifully when I climbed up to the hollow in order to photograph the Owlets. One of them would sweep up behind me and knock my hat off with a blow from her talons, and the other Owl, following suit, would rake my bare head terribly with her cruel claws. As long as I remained in the vicinity these birds continued to attack, and, beside receiving many painful wounds, I had a felt hat absolutely ruined. The male bird was quite indifferent, leaving the protection of the young ones to the large and sturdy hen birds.

This reminds me that some years ago while passing a large, hollow tree at night in the bush my hat was violently struck by a Boobook Owl, which swept up into the tree again and moved its head about at me from this position. The Owls are indeed daring and wholehearted in the care of their young ones. They are also very fond of fun and mischief. Frequently I have witnessed visiting Owls to the garden, knocking Magpies out of the trees at night, chasing the terrified birds round and round the paths, glaring at them with great eyes and heads which appeared to move on rubber necks.

As is the way with the species, the young Owls developed very slowly, and at the age of fifteen days were still very helpless, though



BOOBOOK OWLS: TOP LEFT, 15 DAYS OLD; TOP RIGHT, 19 DAYS; LOWER LEFT, 30 DAYS; LOWER RIGHT, 6 WEEKS; CENTRE, 8 WEEKS.

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their eyes were now open. The mother bird and the other faithful female remained in the hollow with them all day, and sallied forth at dusk to hunt industriously for food. The male birds were quite as energetic, as a result of which every morsel of food supplied was taken up to the hollow and the birds left little for themselves. Whenever I went with some trepidation up the ladder to the hollow, the females would emerge quickly and glare anxiously and angrily at me from a nearby branch; then would come the attack.

I am wondering whether the two birds will ever resume their quiet, trusting ways with me again, for nothing delighted one of them more in former times than to perch after nightfall on my shoulder and converse in softly-uttered " Por-pors ! " The male bird would sometimes watch me at the nursery, but he never thought of resenting or being unpleasant in any way. The baby Owls continued to thrive and grow. At the age of nineteen days I was in the act of photographing them when the male parent flew down with a piece of meat in his beak and dropped it in front of the Owlets. Thus, I was enabled to obtain a most interesting photograph.

At twenty-four days of age the young ones showed a distinct advancement; the small wings boasted a showing of faintly-spotted brown feathers and the Owlets were becoming distrustful, and even defiant of the camera. Each night their two white heads, with ghost-like movements, peered from the entrance to the dark hollow—they were filled with wonder at the greatness of the world! A month from the time of hatching the young birds strongly resented being handled, and clapped their mandibles vigorously whenever I touched them. They assumed most dignified positions and made tremendous eyes in their own quaint fashion.

The trilling whistles of the Owlets were continuous at night, and from dusk onwards the old birds busily fed them, floating back and forth like great moths in the silvery moonlight of early December.

From the age of five weeks onwards the young birds became more venturesome, and on 12th December they ventured forth from the hollow for the first time, being then forty-three days, or roughly six weeks old. I recollect how greatly moved the mother Owl was when the fluffy young ones fluttered unsteadily across the enclosure, hanging for five minutes or more upside down to the wire netting, apparently wondering why they could go no further. The mother used all her powers in order to coax the little ones back to the nursery again, finally succeeding; but whilst they were out she sat beside each one in turn, jealously guarding them from possible danger.

Though Boobook Owls are remarkably active at dusk and again at dawn, I have noted that on dark nights (during the absence of the moon) they are very quiet. [illegible] remain perched in one position for hours at a time. Visi[illegible] the garden have the same habit.

The parent female Owl and [illegible]ful companion left the young ones to their own devices during [illegible]ight from the age of nineteen days, sleeping as formerly in the branches of the wattle-tree, but keeping the hollow under strict observation. Dead sparrows and other prey were occasionally left in the hollow during the day, and as often as not the Owlets perched on them, waiting for the parents to arrive at dusk so that the prey would be torn piece by piece for their benefit.

From the time of leaving the hollow for the first time the young Owls appeared each night, winding their pretty heads round and round at everything and especially at the flickering shadows cast from the lantern which I carried. They sometimes turned their beaks round until they faced the sky. They believed strongly in taking stock of the world from all angles, and often indulged in the exercise of flapping their little wings until they suggested a whirlwind, trilling excitedly the while. With the return of daylight they retired to the hollow again; but at the age of seven weeks they deserted it entirely and remained with their parents in the wattle-tree throughout the day.

They were now given mice, sparrows, etc., whole, and it was entertaining to watch the young birds holding these unfortunates in their talons, showing every sign of contentment, and now and again caressing the victims with their beaks. They would also wind their heads round at the prey in drowsy fashion, and when finally plucking the bird would eat all the feathers instead of discarding them.

The Boobook Owl will occasionally prey on frogs, but he is not keen on them, and I think that it is only when hunting is poor that he does so. Instead of commencing on the head of the prey and holding it firmly under the talons, the young Owls invariably started anywhere and had a difficult task in disposing of their food. I have never seen a prettier sight than that of a Boobook Owl family with the Owlets solemnly regarding me in the soft moonlight of a summer night. Their quaint attitudes quite entrance the spectator.

I have but to whistle to my birds as a rule to hear an answering "Mopoke" call. On January 1st of this year, as whistles, sirens, bells, and tins welcomed in the new year, the Owls were so surprised that they commenced to "Mopoke" persistently and loudly, taking part, though they knew it not, in the welcome to the new year, 1926.

Albatross in Sydney Harbour.—Residents of Manly now and then see this noble bird when journeying past the Heads in the steamer, but it is a rare occurrence for an Albatross to find it way up Port Jackson as far as Circular Quay. It was a beautiful sight one sunny August afternoon to watch a fine Black-browed Albatross (*Diomedea melanophris*) as it wheeled on outstretched, motionless wings about a Milson's Point ferry boat, as though it were an ocean liner in Southern seas. (See *Emu*, XV., p. 214, and picture, p. 243.)—H. WOLSTENHOLME, Wahroonga, Sydney (15/8/26).

Prince Edward's Lyre-Bird Re-visited.*

BY SPENCER ROBERTS, M.B., R.A.O.U., Toowoomba, Queensland.

DURING a trip to the Old Country I went one spring to visit a relative living in a village in Kent; he had been there for many years, and, like myself, practiced medicine. The ins and outs of that lovely countryside and its inhabitants were an open book to him, and as we meandered one Sunday evening after an early supper, he paused on the hilltop and said, " Rest for a few moments, my boy. From here at the half-hour you'll hear the bells of the churches of three villages." Then there was the rectory where a London parson, relieving the local rector, had eventually thrown boots at the Nightingales. And finally he took me to a wood where these same birds were singing divinely. To him this was still one of the pleasures of life—to me it was a revelation. It was the setting and romance which made the episode so wonderful. He who would think of this exquisite poem without thinking of the quiet English countryside, and would describe the notes in so many musical terms, must surely miss much.

So with the Lyre-Bird that I know and love so much in the Stanthorpe hills. Thus, if my thoughts become words, however inadequate, and my words become multiplied, I would beg tolerance, for I had not heard him for more years than four, though ever in my mind the bird " sweetly and nimbly recommends itself ! "

It was in frosty July that I went, and though there had been quite a fall of real snow, incubation was starting. I found the bird perhaps more numerous than previously in these tumbled masses of granite—strewn where the Master-builder decided that the main range, started where Gippsland is, should go no further north. The country was as I previously tried to describe it, untouched by fire and glorious in its shrubs and mosses and trees. Certainly there were quite as many Lyre-tails, which is gratifying considering the prevalence of the fox, that great arch-enemy to ground-birds. But when the bird is watched at play, or when an attempt is made to approach one feeding amidst these great stones, then only can its remarkable agility and acute senses be appreciated and given true value. It is always a source of wonder to me how, say, a bantam can pick out minute insects from a litter and have its eye never more than an inch from the ground, and yet see instantly any object which moves in the air within the possible range of vision. It is, of course, well-known that birds have two or even more focal

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*Prince Edward's Lyre-Bird was described in *The Emu* (Vol. XX., p. 221-23, 1921). A colored plate was given in Vol. XXI., and in the same issue Mr. A. J. Campbell discussed the bird as a sub-species of *Menura novae-hollandiae*, and Dr. Roberts followed (pp. 242-52) with an article treating generally the habits and distribution of this remarkably interesting "new" bird.—EDITOR.

points in the eye, but even then the point is none the less a matter for wonder.

But to return to hard facts. It is often the hen bird, silent, unnoticed, and seemingly unmoved by the male's performance, that gives the alarm note. And this alarm note seems designed for quick delivery and to arouse instantly to alertness. It is a hissing sound—" Kerwist,"—uttered and finished in the fraction of a second, repeated two or three times if the aim is to call the mate's attention to something strange, but rising to a shriek if the alarm is serious enough. A fowl's alarm would cover in time five or six Lyre-Bird's notes, and a snake's hiss is a long-winded expiration. A stick the size of a match, if broken, will instantly cause alarm at many yards' distance. I will not say that the fox never gets a bird, for I have seen some scattered feathers; but that was only once, and the birds are apparently able to hold their own.

In my previous article I described the birds' movements—jumping, volplaning, parachuting, gliding and running, *denying flight*. But here I wish to state that under stress the bird will show regular flying movements, though with extended legs. The legs are still the chief propelling agents, and the movement is quite unworthy of the other actions of the bird, for it cannot fly uphill or rise by it. I first saw it under these circumstances:—We were passing down a steep, narrow cleft in the rocks, just when darkness was falling. A day or two previously we had seen a nest used in 1918, and as we thought again last year, for the entrance was ragged. (I pictured it previously, plate II.) Two of the party had gone past by forty or fifty yards when I came abreast of it and mischievously flicked at it with a long stick I had in my hand.

To my astonishment, a hen-bird volplaned out like a flash. With curving wings and extended legs she made her way down the gorge, and would have almost landed on my companions. Several resounding flaps were made with her wings such as a Scrub-Turkey does, and she managed to tide herself over the difficulty without rising, to immediately resume her volplane and land far away from harm. A dog in hot pursuit of a bird may tree her, but she will not take off again except when almost pushed, and then, with the whole field to choose from, she invariably " planes." Now, there may be an added advantage of silence in a volplane as against flight, apart from the fact that it would in a poor flier be much more rapid. Those of us who have shot Scrub-Turkeys with a dog know that the bird will often take flight as the gun gets up within range, but the good dog will often follow him by the sound of the wings, and will come up with him when he lights again. In the case of the bird volplaning it would be a good dingo, supposing they were at one time enemies of the Lyre-Bird, who could in the country they inhabit race along with his eye on the silently-moving bird. As the bird landed on the ground there would be added danger if the dog was thereabouts.

During our visit the male Lyre-Birds were in wonderful voice. Many were to be found whistling on the mounds, and these were unaccompanied by hens, who were probably engaged in incubating duties. The mounds used at this time are, as a rule, situated at some distance from the nesting-rocks, on the outskirts of the monarchs "territory," so to speak. They are invariably placed in a dense thicket, tea-tree, bottle-brush, or young gum saplings, in a gully. There are sometimes three in a group within a few yards, and frequently two of them in use. These thickets make it a difficult matter to get a good view of the proceedings, but I have seen enough to still call them "dancing mounds."

It was not, however, on the mounds that the best performance was to be seen. When the hen has laid her egg and wrapped it in a few feathers from thigh or breast, she gives herself a "free leg" for a day or two, and then the male welcomes her on to the feeding-grounds with a wonderful performance. As I was wandering one day with my small son, a recently-completed nest was passed; it may or may not have contained an egg. For every bird in the bush seemed to be performing a part-song, a few hundred yards down the gully, and the lie of the land was good—upstanding rocks all the way down, much bracken to walk noiselessly amongst, a head wind, a shower of rain recently fallen to deaden cracking leaves. As we approached, more and more birds seemed to join in the chorus, and finally I could hear the "Nap, nap, nap!" which alone betokens the bird's presence over the next rock. Of this more anon.

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I say *alone* advisedly, as it is the only sure sign. Of their ventriloquial powers there can be no doubt. It is, to my way of thinking, an unconscious effort, and produced simply by the bird's flawless mimicry of what he most frequently hears, and *how he most frequently hears it.* Sounds usually heard at a distance are minimised, near-by sounds given with full tone (often fuller than normal), and both so perfectly produced that it is hard to believe they are not from a great distance or from very near at hand. Thus, certain birds' calls, and these usually friendly ground-feeders such as the Grey Thrush, are given fortissimo, and they are the first heard when being guided by the bird's native call, which can be heard at great distances. Then come such notes as those of Honey-eaters (especially the White-eared), the Magpie, Butcher-Bird, Kookaburra's chuckle, and so forth—the first in slightly more than normal volume, the latter three toned down. Finally, at a few yards, one hears the various Parrots, as they sit on the limbs slowly swaying but talking quietly of flight; the mournful Black Cockatoos as though they were winging an easy way over the distant range; and the Currawong flying far over a valley. These are very piano. Of course, these are not all the calls by any means, and more competent observers have scientifically listed the birds calling, but those I have given serve the purpose as I am concerned with ventriloquism. Often I have peered over a rock for twenty minutes into thickets of tea-trees and never been sure where the Lyre-Bird was till he had left for the next mound, and I had found he had been within a few yards of me!

Between the calls, if you listen—and you will—the "Nap, nap, nap!" will be heard. Woe betide you if you move when this is not going on or has stopped for some time. You must have all your wits about you if you are not to make sudden movements to see where the Black Cockatoos are off to—especially if you have not reached your teens. For the Lyre-Bird has his suspicions aroused, his tail is bristling but ready to shut flat, and, most dangerous of all, the hen bird is on the alert. Now, this is the sound, I take it, which has definitely been said to be an imitation of a rock-napper or woodman. I had at one time convinced myself it was the driving of a wedge by paling-splitters. It has the tempo of a man swinging a maul, and I could even detect the final change as the wedge went through. But I have an open mind, and think it probably a natural note.

But to return to the story. When I heard the " Nap, nap," I raised myself gently, an inch a minute, and glanced over the rock. There, forty feet from us on a flat rock ten yards in diameter, and with an inclination towards us, was our performer. There the stunted tree, a little undergrowth for background, a few ferns, and a perfect, even light from an overcast sky. My thoughts turned to Pavlova as I saw her in her hey-day at Covent Garden, and I was glad I had not foregone this trip to see her in Brisbane, for

" More dear one native charm
Than all the gloss of art."

The hen was not visible, but I was suspicious. However, as the performance went on we became bolder and almost stood right up. Moving at lightning speed, the bird was magnificently graceful, and we got the impression of the lightness of a balloon. All the time the most conspicuous part of the performer was his silvery tail. He gave, *sotto voce*, the chuckling notes of the Kookaburra (not the coarse guffaw), with shaking wings and vibrating all over. He stood erect, quivering as he became the Parrot preparatory to flight, and soliloquised as the well-fed Magpie. He stood erect as if listening to the mournful Currawong which he was imitating. He twisted and turned as he uttered the Thrush's call. Several times he buried himself under the bush, with soft chucklings and shaking body.*

It was during one of these latter performances that the alarm note was uttered; but no female appeared. The male dashed out and gave us a rapid turn or two, but we remained motionless. As if knowing his mate to be infallible, but still doubtful of her instinct, he chuckled like a Kookaburra and just dropped from view over the edge of the rock. Then the hen slowly crossed the stage, with tail semi-erect and unhurried step. (The tail of the female has an angular pack, with the acute angle upwards and the base open; it is never held flat.) She volplaned on stiff pinions and with lovely curves, far down the valley.

We thought the performance ended, and stood up in full view, with no thought of an encore in our minds. But there sounded

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*I have no intention of conveying the idea that the Lyre-Bird really acted the bird he was imitating. No such thing occurs in Australia so far as I know. Birds imitate sounds but not actions, except for the protection of their offspring.

HAUNT OF PRINCE EDWARD'S LYRE-BIRD.
(A FEMALE WOMBAT, WEIGHING 65 LBS., WAS RECENTLY TAKEN IN THESE ROCKS.)

Photo. by J. Henderson.

NATIONAL MUSEUM [illegible] WASHINGTON

the instantly-arresting alarm note and we froze stiff; and before we could lie down the chief actor appeared on the stage again. Surely his mate must have gone uphill towards her precious nest! Slowly he came towards us, eyeing us from one angle, then another, whistling and floating, as light as thistle-down, from rock to rock. He would peer at us round one rock and peep at us from another. His silvery tail feathers seemed almost luminous against the darker backgrounds. All the time he gradually approached, grasping and throwing small litter to the side with his feet, a sure sign of intense excitement. At a distance of only ten feet he stood on a rock pinnacle to see what manner of beings were these strange, unmoving, unconcealed creatures. Our view of him was perfect.

One did not notice his feet to be large; they simply fitted into the picture and gave balance; a weaker foot would have looked out of place. His beautiful, limpid, brown eye and semi-erect crest gave distinction to his colourless head; this crest is very like that of the Whip-Bird, but is less erect and reaches more towards the occipital regions. The body has beautiful poise and the tail, of course, is *the* feature, (1) The filmy feathers are silvery, almost shining, resembling a superb osprey held in a round base such as ladies wore, but not having so much nod in them; (2) The main tail feathers were in the centre of this diaphinous setting, and there seemed to be a nebula round them. They were averted and showed the chestnut and white markings on the lower surface and the black curled ends were uppermost. I never appreciated their value so much before. One could see that the markings did not reach the shaft. The black tips waved gently in the wind and shook with each movement. Their every line and curve added grace to the whole thing. And there are many lines and curves, for if one examines this main tail feather or " outer rectrix," as it is called, it will be found that the curved tip is not on the same plane as the shaft when laid on a flat table, and even the curved tip has a curve on itself. The result is that when held semi-erect, as it was in this case, it naturally has a much more graceful fall than if it was simply a flat surface; (3) The pair of central, strap-like feathers did not enter into the picture much, but I have no doubt they do so when one can see them on a mound in some special picture.

Gradually the Lyre-Bird gave us up and went his way up the hill. Some note, unheard by us, must have reached him from the hen, and his anxiety disappeared; for, finally sitting on a low branch of a tea-tree, he puffed his feathers. When he moved he passed as gently as a breeze up the hill. Long may he live and numberless be his progeny!

My excuse for submitting these notes to so important a journal as *The Emu* is that ornithologists of standing urge us " small fry," by the written and spoken word, to record what we know of this, the shyest bird in the bush and the most difficult to approach. Even without this urge, to watch and hear a Lyre-Bird would still be to me one of the pleasures of life. But my sympathy goes out to those who try to photograph him.

Mistletoe-Birds as Plant Distributors.

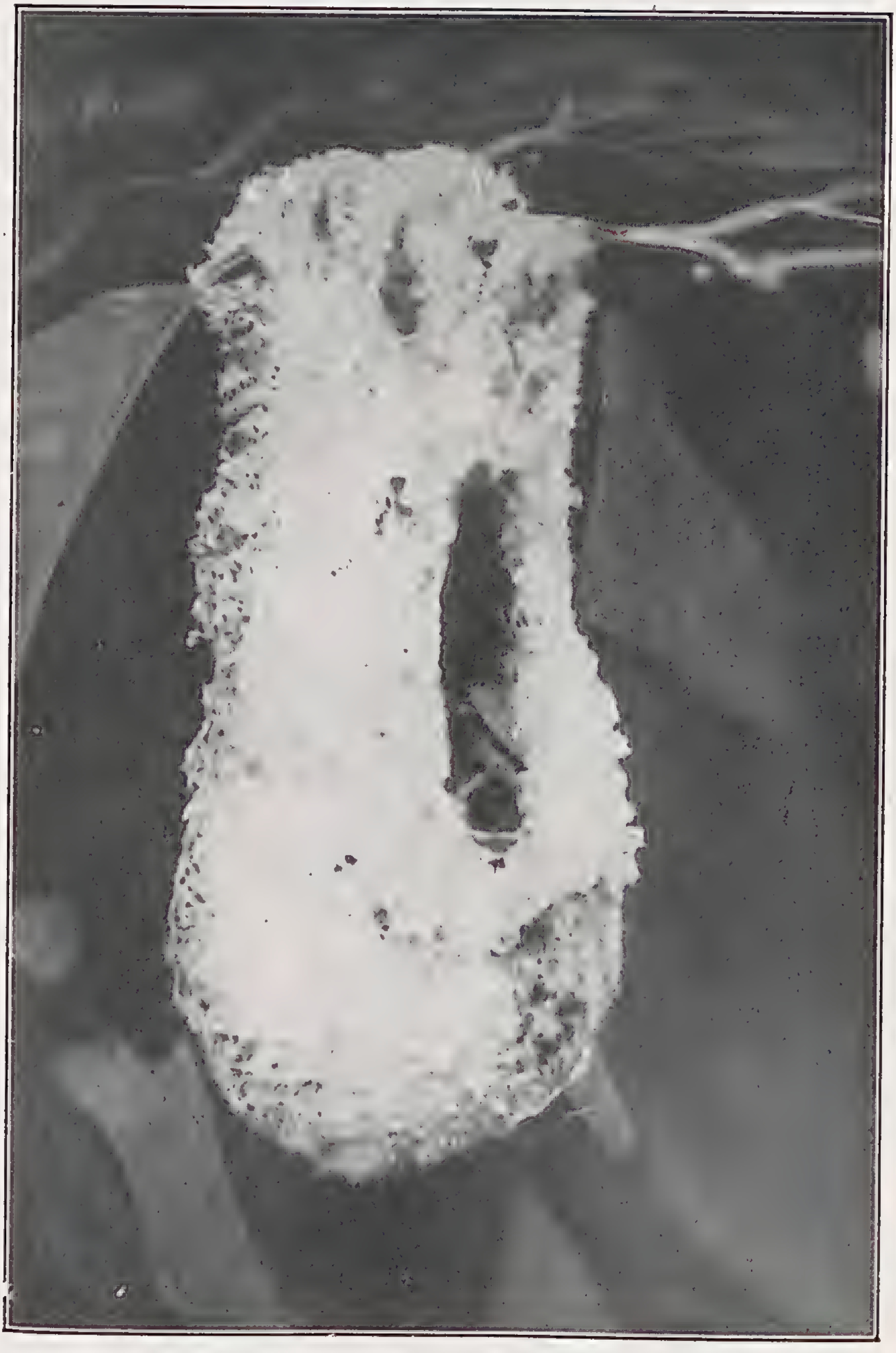
By G. A. HEUMANN, R.A.O.U., Beecroft, Sydney.

A SWEET and gentle disposition is combined with brilliant plumage in the case of Australia's single species of Mistletoe-Bird, the tiny *Dicaeum hirundinaceum.* The male bird has the head, back, wings, and upper tail feathers a metallic steel-blue, the throat and chest a deep claret-scarlet, the belly greyish-white, and the under-tail feathers a salmon-pink. The hen is a dull grey, with a whitish-grey belly and light salmon-pink under tail feathers.

These wee birds are exceptionally high fliers, and are seldom seen on a low tree. Their only drink seems to be dew, taken early in the morning. During the mating season, April and May, their mating call can be heard at almost any time; it is exceptionally penetrating and carries a long distance. The cock bird indulges in quite a nice little song of his own. Although the males never really attack each other, they lower their wings, stretch their necks and raise their head feathers. In this attitude they emit peculiar sounds, no doubt a sign that they are in a very furious mood. Mistletoe-Birds usually nest in October and November, building in almost any kind of tree. During the breeding season they become exceptionally tame. In freedom, shown a very small meal-worm or little grub, the parents will readily fly on the finger and take the dainty for their young. For the most part, the young are fed on insects, but as soon as they are sufficiently advanced mistletoe berries appear on the menu. The young males in their first feather are just like the females. They colour about April, but the gorgeous red and pure steel-blue comes only after several years of moult.

These birds are exceptionally sensitive to cold, and many immature birds must perish during the heavy rain-storms and cold winters nights. One may be found sitting on a branch and clinging to it so tightly that it can only be removed by using force. The bird seems to all appearance dead, and it may remain in that condition for days; but if brought to the warmth of a stove, little by little the muscles relax, and within less than a quarter hour the bird is as healthy as ever. A friend who, before the war, took six Mistletoe-Birds to America, told me afterwards that they had been frozen to death and resurrected four times! I have had similar experiences with my own aviary birds each winter.

I have never seriously tried to breed these birds in captivity, the young being so very tiny that it would take too much time to procure the insects they would require. My birds, have, however, built in asparagus vines and laid eggs. It is a simple matter to keep these birds in captivity. They are remarkable eaters. We allow half a banana per bird per day, besides giving them other fruit in season. They will also eat cake and finely-chopped egg. In 1912 I presented some to the Zoological Gardens in London. When I was in England



NEST OF THE MISTLETOE-BIRD.

Photo. by A. H. Chisholm.

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in 1914 they were still doing well, and the curator told me they were one of their best Australian exhibits. I have often been asked to send more specimens of them, but as by law only the Zoos may make exchanges, I think it will be a long time before another such exhibit is seen.

As an aviary dweller the Mistletoe-Bird is certainly all that could be desired—an exceptionally good liver, very tame, and beautifully coloured. I have kept them in my aviaries during the past 35 years, and there is no bird I like better. The only annoying point is that during the mating season the caged birds call wild birds down, with the result that the fruit trees become covered with mistletoe. In freedom, the mistletoe berries are undoubtedly their staple food, with insects during the breeding season. In summer-time, when mistletoe berries are scarce, these birds will eat apricots, pears, or persimmons. I have two large mistletoe bushes attached to a small wattle tree in my garden, and at arm's length have watched the way the birds were eating.

They are certainly very particular in their choice of berries. Quite a number are tapped first with the bill before they find one to possess the right consistency—not too young and not too ripe. For some time the berry is squeezed between the mandibles, and is then swallowed whole. Of course, there is very little flesh on the mistletoe berry. It is really skin and kernel, and that part of the skin which is digested is evidently at the same time turned into a white, glutinous substance. When the stone is passed by the bird, it is encased in this glutinous substance, which seems to hold the kernel fast to the branch on which it is dropped ; drying is almost instantaneous. But nature makes doubly sure that its work shall be done well, and causes the bird, as soon as the stone is dropped, to hop along the branch about three inches jerking out more of this glue, which then acts as a safeguard in holding the mistletoe kernel in place.

Now, the remarkable thing is this—that when the young mistletoe shoots out its first root, this root runs along on top of the gluey substance ejected by the bird, for the primary purpose of holding the seed to the branch. The tap-root does not enter the branch of the tree to its centre, thereby causing a big swelling to appear, until a later period. No mistletoe will hurt a gum tree, no matter how many are on one tree, for the reason that it is indigenous to it. But the parasitic plant will certainly kill the branch of a fruit tree, or the whole of it, either by strangulation or by sucking its sap. Once growing, the mistletoe parasite is exceptionally hard to eradicate from a fruit tree, unless taken at a very early stage, for the roots seem to run below the bark and throw out plants at any point.

It is a remarkable thing that the mistletoe kernel will grow only where the bird has deposited it. I have experimented for many years trying to put mistletoe kernels, the moment I saw them deposited, on another branch of the same tree, and on branches on trees close by, but I have never been able to cause one of those transplanted seeds to germinate.

Economic Value of the Stubble Quail.

BY J. R. KINGHORN, C.M.Z.S., Australian Museum, Sydney.*

IN the following pages will be found an account of investigations recently carried out at the Australian Museum, relating to the food of the Stubble-Quail (*Coturnix pectoralis*), and the result of a critical examination of the crops and stomachs of 30 fresh specimens.

Looking back through literature dealing with " game " and " Game Acts," I find that diversity of opinion has existed for more than twenty years, the farmer contending that Quail should be totally protected, the sportsman that the open season is too short or too late, and the zoologist that it is too long, often embracing portion of the breeding season.

Sportsmen are often divided into three sections, as follow :—(1) The shooter who sallies forth with gun and ammunition all the year round, and blazes away at all and sundry, and revels in wholesale slaughter. (2) The professional shooter, who restricts himself to game birds, but does not mind how many he kills as long as he is well paid for it. (3) The true sportsman, who shoots occasionally, for a small bag, and who believes in a rigid close season during which the birds will have an undisturbed and very necessary period in which to breed. The latter are few and far between, and it is a pity that, when an important question arises relating to the economic value of Quail, more consideration is not given to the views of the " man-on-the-land," who is the person most concerned, and who in this instance declares that the Quail are invaluable to him as destroyers of pests.

HOW THE INQUIRY ORIGINATED.

The Farmers' and Settlers' Association of New South Wales, a very representative body of men, discussed the above matters at several consecutive annual conferences, and in 1922, Councillor Field, of the executive, moved, and Mr. O'Neil (Cowra) seconded, and it was carried unanimously, " That Quail be wholly protected on account of their value in destroying the seeds of noxious weeds." It was stated by the mover of the motion that, " if this destruction of our natural fauna was going to continue, we should very soon not be able to grow anything for pests."

Whether or not any action was taken I do not know, but in 1923 Mr. F. J. Grogan (Galong) moved and the conference agreed : " That the conference request the Government to protect Quail for five years." The Chief Secretary sought the advice of several ornithologists, who commented as follows : Mr. W. W. Froggatt said that Quail eat grain, seeds and insects, but do more good than harm. Mr. H. L. White considered the Stubble Quail to be the only one of the genus in which there was a suspicion of grain eating, but that its value as an insect destroyer far outweighed any damage it did. Capt. S. A. White stated that he looked upon this species, and the Quail family generally, as amongst our most useful birds. Others also were approached, and, while some admitted that a little grain was eaten, none looked upon the bird as anything but valuable.

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*By permission of the Trustees of the Australian Museum.

Against these disinterested statements we have those of some members of the deputation of sportsmen who visited the Minister and who asserted that Quail was not insectivorous but lived almost entirely on grain ; thereby implying that they were entitled to shoot Quail as being destructive birds, and that they were doing a noble act in destroying them ! Not once did they put forward the plea that they did not want their shooting to be interrupted.

As a final act, the papers were sent to the Director of the Australian Museum for comment, and so came under my notice. After the matter was gone into thoroughly and given serious consideration, it was recommended that the farmer be met as far as possible, and that at least two years protection be granted as a trial. It was hoped that true sportsmen would view the matter in the right spirit, as the only ones who might raise an objection would be the persons who were out to kill for killing's sake.

Following this, a proclamation was issued protecting Quail for a period of two years, so that there would not be any open season for the years 1924 and 1925. A storm of protest arose and sportsmen began to organise, bringing in with them country store-keepers, hotel-proprietors, gunsmiths, etc., each putting forward a plea that they would be victimised by the closure and so lose money, as they had laid in stock in anticipation of a good " season." Several so-called sportsmen offered to supply Quail for examination, one in particular stating that he would be willing to send for examination any number of birds, and guaranteeing that their crops and stomachs would be found to contain wheat and other grain, and certainly no weed-seeds or insects. As the gentleman in question is well-known as a Quail breeder, feeding his captives almost entirely on wheat, his offer was not accepted.

There followed more correspondence, and eventually I offered to carry out an investigation relative to the economic value of the bird. A communication to this effect was sent to the Chief Secretary, but it was asked that the specimens for examination be collected by disinterested persons throughout New South Wales, and that each Quail have a label attached bearing information denoting the type of country in which it was shot, viz :—stubble, lucerne or grass lands, and the date of collecting.

On 4th March, 1924, the Chief Secretary, acting on advice from the Director of the Museum, notified the Inspector-General of Police, who in turn advised all the country police centres of this State, that from six to twelve Stubble Quail were wanted from each district for investigation purposes. In all, fourteen centres were advised, and, as the usual open season should have commenced in May, it was expected that the birds would be plentiful, and that at least one hundred would be captured. As the list will show, however, Quail were very scarce all over New South Wales that season, even as late as July, and so the response was rather disappointing.

Almost as soon as the requests were made to the country centres, replies began to come back. Some of the police stations kept in touch with the Chief Secretary's Department for several months, and all seemed to be very anxious to have the question settled. The great majority of the police were in favour of protection, and none of them suggested that Quail were wholly undesirable. The Stock Inspectors also gave encouraging reports, which were very open-minded, and generally very much in favour of the farmer's point of view.

The following paragraphs contain brief summaries of the police reports from the various country centres, each centre having received returns and reports from outlying stations :—

Bega	17/3/24	6	Quail ; three from grass land and three from lucerne.
Cooma	18/3/24	6	Quail ; all from lucerne near grass land.
Goulburn	18/3/24	9	Quail ; three from grass land, three from stubble, three from lucerne.
Corowa	16/6/24	6	Quail ; all from grass land ; none to be found in lucerne or stubble.
Bathurst	11/7/24	3	Quail ; all from lucerne land; scarce in the district.
Wagga	13/6/24	0	Quail ; very scarce. Later, unable to get any.
Broken Hill	19/6/24	0	Quail ; have not seen any in the district for some years.
Grafton	20/6/24	0	Quail ; very scarce in June, may be able to get some in July. Later, none to be got.
Windsor	28/5/24	0	Quail ; and again on 18/6/24 no quail to be found in district.

Moree ...	10/3/24 ...	0 Quail;	again on 12/6/24, none in district; quite a rarity now to see them anywhere near Moree. (A few years ago they were here in thousands, but appear to be shot out).
Armidale ...	19/3/24 ...	0 Quail;	and again on 11/6/24 none in district.
Molong ...	3/4/24 ...	0 Quail;	none in district; appear in large numbers at odd intervals, but quickly disappear.
Yass ...	4/4/24 ...	0 Quail;	very scarce in district; not able to secure any.
Deniliquin ...	no answer to letter, (evidently none in district).		

It will be seen from the foregoing that 30 Quail came to hand, all being from the south-eastern quarter of the State, although the police-stations advised covered the whole of New South Wales. It is interesting to note that there were either very few or none at all in the other three-quarters, of the State notwithstanding the fact that the whole of the time they were reported scarce was during what would normally be the open season; so, in these quarters, "Protection" had nothing to do with the loss (?) eventually sustained by those persons who had "laid in stock in anticipation."

EXAMINATION OF THE STOMACH CONTENTS.

The examination was a long and tedious task. As the specimens came to hand the crops and stomachs had to be carefully removed and placed separately in small tubes and bottles, each one bearing a number (from one to thirty), as well as a label containing full information. After this, each "lot" had to be searched under a binocular, and duplicates of all seeds removed, one being mounted on a numbered microscope slide, and the other placed in a small capsule correspondingly numbered. The mounted set was retained at the Museum, while the duplicates were, together with a complete list of data, sent to the Botanic Gardens, where they were identified and named by Mr. E. Cheel. The duplicate list of named seeds was returned to me, and I immediately set about a detailed examination of the crop and stomach contents.

The complete details of the food of each of the thirty specimens examined will be found in the following paragraphs :—

BEGA. 6 Quail Nos. 1-3 from grass land, 4-6 from lucerne. (1) Female. Remains of insects, 24 seeds of nut grass (*Cyperus*), Lesser canary grass (*Philaria minor*). (2) Male. Complete grasshopper as well as other insect remains in crop. Grasshopper remains in stomach, as well as seeds of *Chenopadium*, many sorrel, and some nut-grass. (3) Male. About one dozen Japanese millet seeds, and well over 100 sorrel (*Rumex acetosella*) and a few insect remains. (4) Female. Crop and stomach contained a few fragments of spiders and insects, as well as hundreds of seeds, mostly weeds, as follows :— 60% sorrel (*Rumex acetosella*) ; 10% yellow wood-sorrel (*Oxalis corniculata*); 2% Japanese Millet (*Pannicum crus galli*) ; 3% grass and weed fragments ; 20% lotus (*Leguminosae*) ; 5% insect fragments. (5) Female. Hundreds of weed seeds and a few insect remains ; 45% knot-weed (*Polygonum aviculare*) ; 40% sorrel (*Rumex acetosella*) 10% slender thistle (*Carduus pycnocephalus*) ; 5% insect remains. (6) Female. Stomach full of sorrel seed and a few unidentified weed seeds.

COOMA. 6 Quail. Nos. 7-12, all shot in lucerne near grass land. (7) Female. Stomach contained seeds of *Amaranthus*, sorrel, slender thistle (*Carduus pycnocephalus*), and knot-weed (*polygonum aviculare*). The crop, which was full, contained 50% caterpillar, spider, insect fragments, and one complete grasshopper ; 50% weed seed (hundreds), *Amaranthus* and knotweed. (8) Male. Stomach contained caterpillar and beetle remains, seeds of *Amaranthus*, sp., many sorrel and a little green food. (9) Female. Crop full of Chenopadium or tumble-weed (*Amaranthus*) Stomach: one grass seed (*Graminaceae*), a few sorrel, and hundreds of *Amaranthus*. (10) Male. Crop full of seed of *Amaranthus*. Stomach : caterpillar remains and seeds of false dandelion (*Leantoparlon*) and sorrel. (11) Female. Crop full :—80% knot seed ; 20% weed seed, a sorrel ; Stomach contained insect remains and hundreds of sorrel and *Amaranthus*. (12) Male. Crop and stomach full of hundreds of seeds :—50% *Chenopadium* ; 30% sorrel ; 10% yellow wood-sorrel (*Oxalis corniculata*) 4% knot-weed ; 4% weed seed, unidentified ; 2% grass seed.

GOULBURN. 9 Quail. Nos. 13-15 from lucerne. 16-18 from grass land, 19-21 from stubble land. (13) Female. Crop and stomach full :—10% insect remains (grass-hoppers) ; 10% *Amaranthus* seed ; 40% yellow wood-sorrel ; 30% slender thistle (*Carduus pycnocephalus*); 10% lesser canary grass (*Philaris minor*). (14). Female. Crop contained :—Two complete grasshoppers, 4 caterpillars, other insects and seed :—40% yellow wood-sorrel, 40% Slender thistle, 10% tumble-weed (*Amaranthus*), 10% lesser canary-grass ; Stomach contained remains of insects and seed as mentioned above, in the bulk about 60 % insect remains, 40% weed seed. (15). Female. Crop and stomach contained 2 complete grasshoppers, 1 spider, 2 thistle (*Centaurea*), 6 grass (*Graminaceae*) and hundreds of slender thistle; bulk contents by weight, about :—20% insects, 78% weed seed, 2% grass seed. (16) Male. Crop contained remains of flies and crickets, as well as hundreds of seeds of slender thistle. Stomach, weed seed and insect remains, slender thistle. (17) Male. Contained remains of flies and spiders, grasshoppers and other insects and many seeds of slender thistle, sorrel, knot weed, and two weeds unknown. (18) Male. Crop contained weed seed and insects. Stomach full of weed seed :—95% slender thistle, 5% sorrel. (19) Male. Crop contained two complete grasshoppers and seeds of slender thistle, knot-weed, and six grass seeds. Stomach full: 95% grasshoppers, 5% weed seed (*Amaranthus, Oxalis, Carduus*). (20) Male. Crop contained seven complete grasshoppers and a few seeds of slender thistle. Stomach full of grasshopper remains and a few slender thistle seeds; 99% grasshoppers. (21) Female. Two complete grasshoppers, four caterpillars, some seeds of slender thistle in crop. Stomach full of grasshopper remains and a few seeds of slender thistle.

COROWA. 6 Quail. Nos. 22-27, shot in grass land, near a roadway leading to the farm house from hay stack and stubble (a quarter of a mile away). (22) Female. Crop contained 22 wheat grains 1 oat grain. Stomach full of slender thistle and other weed seed. (23) Female. Crop: 6 wheat grains, 12 grass seeds, 20 knot-weed. Stomach full of slender thistle and sorrel seeds. (24). Male. Crop: 1 wheat grain, many sorrel, many knot-weed. Stomach :—full: 90% sorrel, 10% thistle-seed. (25) Female. A few insect remains, 5 grass seeds, many seeds of *Carex* sp. and *Lithospermum*, in bulk 60 % knot-weed. (26) Female. Crop contained four thistle seeds and some sorrel. Stomach full of thistle-seeds and greens. (27) Female. Crop contained 5 wheat grains, 7 grass seeds and about 200 knot-weed.

The above specimens, 22-27, were shot at 1 p.m. on 16/6/24. The last harvest was in December, 1923, and no wheat had been sown since then in the land where the birds were shot. The nearest wheaten hay stack was a quarter of a mile distant, as also was the nearest farm and stubble, but a farm roadway adjoins the spot. From this it would appear that the birds has either visited the hay stack or had picked up the wheat from the side of the farm roadway (as some of it was showing signs of age) and were disturbed and driven to the grass land where they were shot later.

BATHURST. 16/6/24. Three Quail from lucerne land, Nos. 28-30. All three specimens (one female and two males) had been feeding on the leaves of the clover (*Medicago denticulata*) and seeds of panick grass (*Panicum bicolor*), as well as small beetles.

RELIABLE OBSERVERS WANTED.

The above report should make it clear to all that the farmers were quite correct in their contention that Stubble Quail are valuable birds, and that they feed mainly on noxious weed seeds and insects. On the other hand, it shows that the sportsmen were wrong in saying that these birds are destructive and eat nothing but grain, or very little weed seed and insects. Furthermore, a south coast representative attending the deputation to the Chief Secretary, who declared that the season opened too early, and that it should be extended so as to be from July to September, and who endeavoured to back his statement by asserting that Quail did not appear in his district until late in the ordinary season (15th May to 15th July) was proved to be wrong ; for Bega supplied the first batch of Quail required, sending six specimens to the Museum in March.

Reliable information relating to the movements of Quail is very hard to obtain, as is the case with all nomadic birds, the reason being that in their wanderings in search of food they are controlled more or less by climatic changes. One year they may be found in a certain district in many thousands, while during the next and perhaps following years they may be entirely absent, even though the season be a good one. Bearing on this point, we may note that in New South Wales during 1924, the police reports showed that Quail were very scarce, and there was no indication that they would be plentiful during 1925*, notwithstanding the fact that the previous season was a record one and decidedly favourable to Quail.

Mathews says that migration of Quail in Victoria is usually south in September and north in April. In that case, providing the birds kept travelling north, they would reach Bega in May, but there is no certainty that the birds taken at Bega in 1924 came from Victoria. They may not have moved out of that State at all, as they are well known to remain within a State during a whole year, and for years at a time, just moving round a little in search of food.

Looking up information concerning the breeding season, we will find that in eastern Australia, from Queensland to Victoria, and in Tasmania, as well as parts of South Australia, it commences as early as October and continues to the end of February; but to show how irregular it might be and how it must depend somewhat on food supply, season, climatic changes etc., I may mention that it has been known to extend to other months of the year in various localities, March, June, and July being mentioned by observers in New South Wales, Victoria, Central and South Australia.

Such irregularities in the breeding season would suggest that occasionally the usual " open " shooting season interferes with the nesting of the birds, but such cases are the exception rather than the rule.

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*During the following year (1925) Quail were also scarce in N.S.W.

I am forced to believe that Stubble Quail are becoming scarcer every season, and that unless occasionally afforded total protection for periods of, say, two years, they will eventually join the ranks of our rare birds. Apart from their destruction by man, they have now to contend with many new enemies. Man destroys by shooting (which would also tend to drive away the survivors), and through the very necessary process of " land development," by which many thousands of young birds and eggs are unavoidably destroyed in the fields during ploughing and harvesting operations.

Quail also suffer thousands of casualties through the ravages of their ground-feeding enemies, such as native cats, snakes, goannas, foxes, and the latest and by far the most destructive enemy of all, the domestic cat gone wild. The country is being over-run with cats—savage, cunning, rapidly-increasing pests—which are having a devastating effect on all ground-nesting birds. And Quail suffer perhaps more than the majority of birds on account of their habit of breeding in the stubble of settled areas.

From the investigations cited it will be obvious that the amount of weed seed and the numbers of insects, especially grasshoppers, destroyed, prove beyond doubt that " the Stubble Quail can be counted as one of our most useful birds, and one that is saving the country many hundreds of thousands of pounds every year." Every true sportsman must agree that the farmer should receive first consideration, and that if the Quail is valuable to him it should receive a greater amount of protection from the State than is at present the case. This would not do away with open seasons, as has been suggested, but such seasons should be granted only at such times as the birds may become too numerous in certain districts, and where it can be proved that they are doing damage, as is at present the case with certain animals controlled by the Pastures Protection Board.

Before closing it might be well if I gave a list of the open seasons for Quail throughout the Commonwealth, so that they might be compared with the breeding seasons, etc. :—New South Wales, 15th May to 15th July ; Victoria, 1st April to 31st July ; South Australia, 1st February to 31st July ; Tasmania, 1st to 30th June ; West Australia, apparently any time, for I cannot find a definite statement regarding Quail in the " Game Act " of that State ; Queensland, 14th April to 31st October in the northern half (District 1) and 1st April to 31st August in the south (District 2).

It will be seen that there is left to the professional shooter and others considerable latitude for trafficking between States, and in my opinion it would be an excellent thing if ornithologists in each State would go carefully into the question whether it would not be possible, on account of the nomadic movements of Quail, to have the open seasons made more uniform throughout Australia. The same work might be done with great advantage in the case of other birds.

The Charming Crescent Honeyeater.

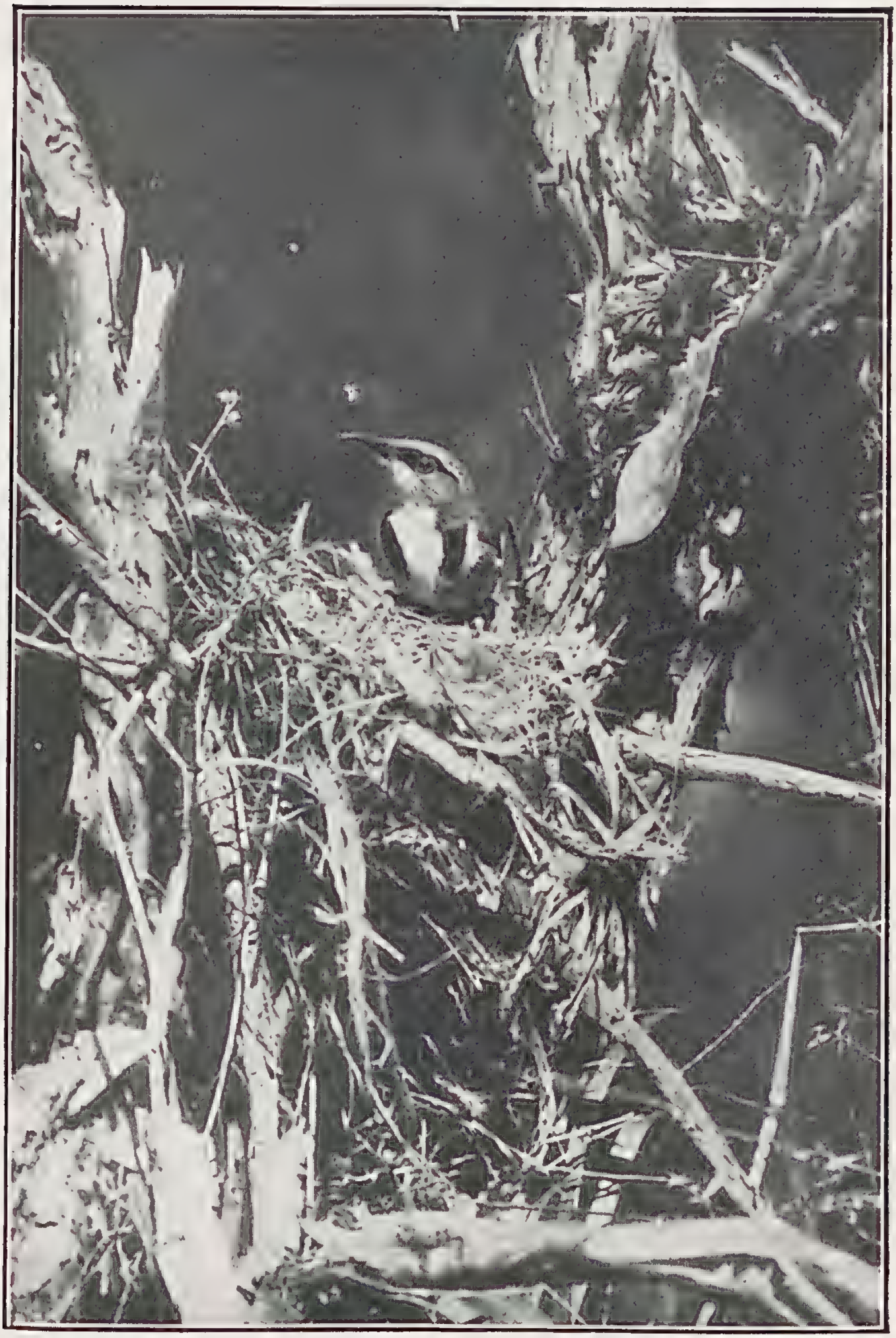
BY D. DICKISON, R.A.O.U., Melbourne.

THE Crescent Honeyeater (*Phylidonyris pyrrhoptera*) is moderately dispersed throughout large areas of the scrub country of southern Victoria, where its loud, penetrating cry, " Egypt," is a familiar bird-note. In plumage the male presents a neat and sprightly appearance, having a conspicuous black and white breast, bright yellow on wings, and dark brown on back and tail. Although having similar markings, the female is considerably duller in plumage, and has a brown breast indistinctly marked with two black stripes.

I had often seen and heard these birds in many of the forest parts of Victoria, and on a few occasions had found their nests while working my way through dense scrub ; but it was not until August 30, 1925, that I gained my first opportunity of observing their nesting habits. On this date I was engaged in photographing Scrub-Wrens in a patch of tea-tree scrub near Lilydale, and unexpectedly came upon a newly-built nest in a thick tea-tree bush about 5 ft. from the ground. The birds were not in evidence that day, but on visiting the nest a week later I found the female sitting upon two delicately-colored eggs. Efforts to photograph the sitting bird proved unsuccessful on account of the secluded position of the nest and the dull light on that day. I again visited the nest ten days later, but found indications of desertion; the eggs were wet and the nest was saturated by the rain which had fallen that day. However, three days later the female was still on the nest and had hatched out two young ones. These were lightly covered with black down and had their eyes closed.

For several days after the young were hatched the female continued sitting on the nest, leaving it only for brief intervals to procure food for herself and young in the surrounding bushes. The male, who had seldom relieved his partner during the incubation, was now compelled to fulfil his duties in earnest, and was, therefore, constantly engaged in bringing food to the young ones. The duration of these visits was from fifteen to twenty minutes. The method of approaching the nest was similar on each occasion, and the bird never departed from the custom. On returning from afield with food he would give two or three short, sharp notes, and then fly down and perch upon a small, bent, dead sapling. Here he would display much uneasiness at my presence by hopping backwards and forwards along the branch. Then, pausing for a few seconds, he would make a dive directly on to the edge of the nest, from where he would again scan my camera in a curious fashion before proceeding to feed the young ones. Upon completing this mission he would dart swiftly past me and show resentment by snapping his bill. Eventually he became so confiding that I was able to discard the use of a line to the release and take the photos while standing by the camera.

With the advent of brighter weather I made many further attempts to photograph both parent birds at the nest. With the usual temerity



MALE CRESCENT HONEYEATER AT NEST.

Photo. by D. Dickison.

NATIONAL MUSEUM MELBOURNE

of his sex the male disregarded my presence and came regularly to feed the young,* but the female evinced a most retiring disposition. Throughout the whole of the time my camera was near the nest she showed feelings of concern. She would approach and settle on the nest very cautiously, and would leave it on the slightest sound.

The male made many visits to bathe in a small pool of water some fifty yards from the nest. By manoeuvring the wings he was able to splash the water over his back, and this he would repeat several times. Then, for a few minutes, he would preen his feathers on a branch before resuming foraging.

This pair of birds was very partial to some flowering lucerne trees growing in an old orchard some two hundred yards away from their nest. In addition to nectar-bearing flowers, these trees carried multitudes of insects, which probably accounted for the close relationship between the trees and the Honeyeaters. That this was not an isolated instance is supported by my having witnessed the only two or three pairs of these birds in the Loch Valley, at Noojee, being almost entirely confined to a few lucerne trees growing on the river bank. Although numerous other trees were in flower at that time, the Crescent Honeyeaters were never seen feeding in other trees. Investigations into the food of certain Australian birds have revealed the diet of this Honeyeater to be almost entirely insectivorous.

The nest is constructed of bark, usually that of messmate and stringy-bark trees, and is lined with long, thin strips of soft bark or thin stems of dry grass. Generally it is placed amongst sword-grass or in a thick, low bush. The number of eggs to a clutch varies; usually three but very often only two are laid. In many cases these variations are probably due to the season or even the locality in which they are laid. They are similar to the eggs of most Honeyeaters, being a faint pink, marked at the larger end with heavy red and pinkish spots. Incubation usually takes a fortnight, but this time may be exceeded by one or even three days.

Unlike most Honeyeaters, which seem adapted to practically any class of forest country, the Crescent Honeyeater appears to be strictly confined to light scrubby country in which sword-grass grows abundantly, and through this preference it is restricted to small areas.

In distribution the Crescent Honeyeater ranges from southern Queensland along the Great Dividing Range to Victoria, finally ending in South Australia. Tasmania is regarded as its stronghold, from which fact it has earned the casual name of Tasmanian Honeyeater. When many of the original conditions existed around Melbourne years ago, this bird inhabited the scrub within eight miles of the city. But with the changes that have taken place, it has long since been forced to retire into more secluded localities, and at present it would be difficult to find a pair within a radius of 16 miles of Melbourne.

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*Is it not the experience of bird-photographers that the female of the species is usually the tamer of the two?—EDITOR.

British and Australian Birds—A Comparison

BY H. WOLSTENHOLME, M.B.O.U., Wahroonga, Sydney.

DURING a stay in England for about six months in 1925, I was enabled, through the assistance and friendliness of members of the Royal Society for the Protection of Birds and of the London Natural History Society, to learn a little about British birds. I went to many field-outings of the Natural History Society (ornithological section) and saw about 100 species of land birds and many nests, and made comparisons with the birds of south-eastern Australia with which I am acquainted.

Of necessity, the avifaunas of Britain and Australia differ greatly. For Britain is a small country, one sixth the area of New South Wales, and being contiguous to Europe she is included in Sclater's Palaearctic Zoogeographical Region, and her birds are closely allied to those of the northern part of the Old World ; while Australia, a vast island continent, comprising almost by herself an entire Zoogeographical Region in the southern hemisphere, has whole families of birds peculiar to herself. Her long isolation is the cause of the survival of old types, *e.g.*, Emu, and at the same time the reason for other forms showing great diversity in development, *e.g.*, Honeyeaters. England extends from 50° to 55° north latitude; Australia from 10° to 40° south latitude, (all approximately) which means that Devonshire (say), one of the warmest counties in England, is about 10° nearer to the Pole than southern Victoria, one of the coolest parts of Australia.

Britain therefore has the avifauna of a cold climate. Her principal birds (as in most places) belong to the two classes or groups of :—

(1) residents, and (2) summer visitors; the resident birds making migratory journeys within their range as in Australia. There are two additional groups of migratory birds in Britain that are seldom thought of in Australia. These are :—(3) winter visitors, and (4) birds of passage. The winter visitors are the birds of many kinds that arrive in Britain in autumn from northern Europe and Arctic regions after having nested in those places. They remain for the winter and return to their breeding grounds in spring. The Redwing and Fieldfare (Thrushes) and the Brambling (Finch) are amongst the best-known winter visitors to England. They nest in the forests of Scandinavia. The birds of passage are the birds that pass through Britain twice in each year ; that is, in both spring and autumn, being a few of the millions of birds that make annual journeys each way between their southern winter quarters and their northern breeding grounds and break each journey in Britain, making it a feeding or resting place. They are largely water birds—ducks, geese and waders. The Turnstone (*Arenaria interpres*) belongs to this group. I saw a small flock on the Norfolk coast. This species is almost cosmopolitan. It is seen by the seashore at Sydney.

Birds of passage are not found in Australia. The Southern hemisphere has not, like the Northern hemisphere, breeding-grounds in its higher latitudes for them. As to winter visitors, Australia also has this group of birds, but they have to be differentiated from the winter visitors of Britain. There are in most parts of Australia wading birds that winter here, after having nested in the frozen tundras of Siberia (on the melting of the ice) and in other places, and made the journey of thousands of miles across the equator to the most southerly parts of Australia; and there are many kinds of birds that winter in northern parts of Australia after spending the spring and summer breeding season in southern parts of the continent—migratory birds always nesting in the colder part of their range.

The grouping of Britain's birds into these 4 classes is somewhat arbitrary and for general convenience only, because there appear to be some species that could be included in more than one group.

There are two more groups that must be mentioned because they include many species rather than on account of the birds themselves. They are :—(5) irregular visitors, and (6) wanderers or stragglers.

The irregular visitors are the birds that are seen occasionally only, such as the Hoopoe, Bee-eater, Roller. When one of these is observed the fact is usually announced in a letter to a newspaper. In this way I learnt of a Hoopoe (*Upupa epops*) appearing in an English garden last year.

The wanderers are those birds whose occurrence is more or less accidental.

The British Ornithologists' Union in its *List of British Birds*, 1923, containing 500 species, has 178 species marked as breeding regularly in some part of the British Isles. These would be the residents and summer visitors. The winter visitors are considered to be, I believe, about 40 in number, making a total of 220 genuine British birds, and leaving 280 species for the remaining groups and for some subspecies. This 280 includes the wanderers or stragglers and among them a very large number of European and American species of which one or two specimens only have been taken, and which, W. H. Hudson says can be called British birds only by a "pleasing fiction."

In the Australian list there are at present two only (among Passerine birds) of such wanderers, one record of each—the Swallow (*Hirundo rustica*) and the Yellow Wagtail (*Motacilla flava*).* As time goes on more, no doubt, will be added from the northern parts of Australia, as it becomes more settled. There are not many people there at present interested in birds. England, it has to be remembered, is a thickly populated country, with an old civilization, where birds have been observed for centuries, and it is situated in a favourable position in respect of migration routes for catching migratory birds of all kinds.

In the notes that follow, it will be seen that in the majority of cases if a family is well represented in Britain it has few representatives in Australia, and *vice versa*. The ordinary names of common British and Australian birds differ considerably and the same name is given

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*See *Emu*, Vol. V., p. 203.

to dissimilar birds in the two countries. In " bird talk " in England you will be bound to hear of Buntings and Pipits but not of Honeyeaters or Whistlers, and their Thrushes are not our Thrushes, nor their Finches our Finches.

NOTES ON SOME BIRDS AND BIRD FAMILIES.

Hirundinidae—Swallow (*Hirundo rustica*)—Similar to and slightly larger than the Australian species, *H. neoxena*, and streamers of tail longer. The British bird is noted on our *Checklist* as having been taken once at Cape York.

House-Martin (*Delichon urbica*).—Its glossy blue upper-parts and pure white under-parts make it a handsomer bird than our Fairy Martin (*Hylochelidon ariel*) As in Australia, the nests are of mud, in colonies, beneath eaves and other projections, but with a round hole instead of a bottle-neck for entrance. As here, Sparrows are sometimes in possession.

Sand-Martin (*Riparia riparia*).—This bird is said to have the widest range of any Passerine bird, but is not found in Australia. The White-headed Swallow (*Cheramoeca leucosterna*) of inland Australia, has the same nesting habit. Both species lay the eggs at the end of a tunnel of sand or soft earth bored by the bird.

Muscicapidae — Flycatchers. — Spotted Flycatcher (*Muscicapa striata*)—A summer visitor. Like our Jacky Winter (*Microeca fascinans*) in size and general appearance, but darker—the spots are not conspicuous—and particularly in its habit of sitting on posts etc., and making sallies after winged insects. But it is not a songster, and it makes a snug nest in a hollow, very different from the skimpy, exposed nest of the Jacky Winter. There is only one other British Flycatcher. They are more numerous in warmer regions. There are 37 species in Australia.

Troglodytidae —Wrens.—Wren (*Troglodytes troglodytes*).—It was probably from this plump little brown bird, a resident species, with cocked, short tail, that our *Màlurus* got the name Wren. They both like hedges and vine-tangles and have loud and animated songs for such small birds.

Turdidae—Thrushes.—Australia has one representative of this large, cosmopolitan family, the Ground-Thrush (*Oreocincla lunulata*). In Britain it contains familiar birds and famous songsters, comprised in three of the sub-families—*Turdinae*, *Ruticillinae* and *Saxicolinae*. *Turdinae* contains the true Thrushes (Song-Thrush, Mistle-Thrush, Blackbird). These three are resident species.

Song-Thrush (*Turdus philomelos*) is the songster, a spotted brown bird that has become well known in some of the southern parts of Australia.

Mistle-Thrush (*Turdus viscivorus*) is lighter in colour and larger than the Song-Thrush. The Australian Grey Shrike-Thrush (*Colluricincla harmonica*) is intermediate in size between these two British Thrushes.

Blackbird (*Turdus merula*). Perhaps the most familiar bird form in England, partly on account of its colour. Here, it is plentiful in parts of Victoria and South Australia, but not in New South Wales or Queensland.

Ruticillinae (Nightingale, Redbreast, Redstart).—Nightingale (*Luscinia megarhyncha*). This renowned bird is about the size and figure of our White-winged Caterpillar-eater (*Lalage tricolor*) and is red-brown in colour. It is far better known by reputation than by sight. Few people see the Nightingale. It visits south-eastern England for a month or two only each year. It is a difficult bird to observe, being shy and frequenting bushes and thickets. You have to locate the bird by its song, and it usually stops singing or moves away when it sees you. Its note is referred to later.

Redbreast (*Erithacus rubecula*). The beloved Robin-Redbreast of England, a resident species, is slightly smaller than our Yellow Robins (*Eopsaltria*) and larger than our Red-breasted Robins (*Petroica*) and is unlike our Robins in having a reputation as a songster, belonging as it does to the Thrush family and not to the Flycatchers. Its red is a dull orange-red, which extends round the eye on to the forehead. The sexes are almost alike.

Redstart (*Phoenicurus phoenicurus*). A pretty summer visitor with reddish tail which it has the habit of vibrating like our Leaden and Satin Flycatchers (*Myiagra*).

Saxicolinae, —Chats.—The British Chats are a little larger than our Chats. They frequent open commons and perch on furze and other bushes like our White-fronted Chat (*Epthianura albifrons*), and so gave the name to our birds. Our Chats are sometimes classed like these as a sub-family of the *Turdidae* but have been given a family to themselves (*Epthianuridae*) in the new *Checklist*.

Prunellidae.—Hedge-Sparrow (*Prunella modularis*). A resident species. This bird is not a Sparrow except in colour. It looks like a small Sparrow with a sharp bill. It has a light song and is called an Accentor and placed in a sub-family of the *Turdidae*. The B.O.U. puts it in a family of its own, *Prunellidae*.

Sylviidae—Warblers.—A world-wide family of small birds. There are in Britain 41 species on the B.O.U. list (12 only regularly breeding) in Australia 38, of which 13 are *Malurus* and 9 *Amytornis* and some small genera. The closely related Australian family, *Acanthizidae* (Thornbill-Warblers) has 51 species, including the large genera *Gerygone* and *Acanthiza*. Almost all the Warblers are of dull plumage, the male birds of the exclusively Australian genus *Malurus* being brilliant exceptions. As the name implies, they are singers and include some of the finest small-bird songsters—*e.g.*, in England the Blackcap, Garden, Sedge and Willow Warblers, and in Australia the genera *Acrocephalus*, *Cincloramphus*, *Hylacola*, and some *Gerygones*. They are all summer visitors in Britain.

Reed-Warbler (*Acrocephalus scirpaceus*) and Sedge-Warbler (*A. schoenobaenus*). These two birds live among reed beds. The Sedge-Warbler's song resembles the song of our Reed-Warbler (*A. australis*), and both birds have the habit of singing at night. In appearance the Reed-Warbler is more like the Australian bird, and it nests in exactly the same way.

Blackcap (*Sylvia atricapilla*) and Garden-Warbler (*Sylvia borin*). These are considered two of the finest singers in England and their songs are hard to be distinguished even by experts. They are not common birds.

Willow-Warbler (*Phylloscopus trochilus*), Wood-Warbler (*P. sibilatrix*), and Chiffchaff (*P. collybita*). These three smaller Warblers, similar to each other in appearance and about the size of our Silvereyes (*Zosterops*) are sometimes called Leaf-Warblers (the generic name means leaf-watcher) as they live largely among the leaves. They correspond to the Australian genera *Gerygone* and *Smicrornis*. The Willow-Warbler has a beautiful little song. The Chiffchaff's note is merely a repetition of its name.

Paradae—Tit or Titmice.—This large family of little birds comprises in some bird lists the Australian genera *Aphelocephala* (Whitefaces) and *Sphenostoma* (Wedgebills) which are now removed to other families in the new *Checklist*. The family is well distributed over the older continents and North America. The following are well-known resident species in England—active little birds, largely arboreal in habit, thus resembling some of our *Acanthizas* which, though often called " Tits," belong to a Warbler family :—Great Tit (*Parus major*). " Great " only by comparison with other Tits, as it is about the size of a sparrow. Blue Tit or Tomtit (*Parus caeruleus*). Long-tailed Tit (*Ægithalos candatus*). A bird of unusual appearance, saved by its tail, it is said, from being the smallest British bird. As is the case with our *Malurus cyaneus*, the young birds remain with the parents till the following season, and small parties may be seen wandering among trees and hedges, sometimes in company with other Tits.

Panuridae. Bearded Tit or Titmouse (*Panurus biarmicus*). This is one of the rare and notable birds of England—a unique form that inhabits reed-beds. One species comprises the family. It is of very local occurrence and, owing to the extensive draining of reedy marshes and fens, which destroyed its breeding places, and also (it must be said) to the rapacity of collectors, it is now confined practically to the Norfolk Broads district, where it is a stationary species. An interesting bird in every way, of unusual appearance by reason of its bright tawny colour variegated with black and white and the blue-grey head of the male and conspicuous black moustache hanging from between eyes and bill. A long tail makes the bird nearly seven inches in length. The birds move up and down and cling to the reed-stems like parrots, flying but little, sufficiently only to clear the tops of the reeds. Their notes include queer metallic sounds—" ping "—like clinking two coins together. I had an introduction to Mr. James Vincent, of Hickling, Norfolk, who is well-known to English ornithologists, and whose field-knowledge of local species is unsurpassed. He with many keepers has control of Hickling Broad, which comprises about 1500 acres of reed-fringed lakes and waterways and some thousands of acres of surrounding land. He punted me over the smooth water and walked me over the flat shores for some miles on one of England's

MR. O. WEBB, AT NEST OF BLACK-THROATED BUTCHER-BIRD. (See Plate 13.)

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best days in early June. He soon found at the foot of some reeds a Bearded Tit's nest containing 5 eggs—the nest of dead reed stalks lined as always with dead flowering tops of the reeds. The male bird has a strange way sometimes of showing his anxiety when one is near the nest. He takes a piece of flowering reed top in his bill and flies to the nest with it. Mr. Vincent told me he finds nests by seeing the male birds do this.

Among the reeds I saw also nests and eggs of the Reed-Bunting (*Emberiza shoeniclus*), Reed-Warbler (*Acrocephalus scirpaceus*)—form and situation of nest just like our *Acrocephalus*—Sedge-Warbler (*A. schoenobaenus*)—this nest was on the ground at the foot of the reeds—and further away nests and eggs of such rare species as the Water-Rail (*Rallus aquaticus*), Garganey Teal (*Querquedula querquedula*),* Montagu's Harrier (*Circus pugargus*), thought to be on the verge of extinction, Short-eared Owl (*Asio flammeus*). This is a day Owl. The nest was on the ground beside a small bush. A parent bird swooped at us, snapping its beak, while we were examining the fluffy nestling. We saw also nests of Redshanks (*Tringa totanus*) the birds making a great to-do flying over us, and of other commoner species. Here too I saw the Common Bittern of England (*Botaurus stellaris*) and heard its booming, with particular pleasure because (as I was informed) after having been lost to England for 40 years as a breeding species, it has now been completely re-established in the Norfolk Broads, and was breeding at Hickling at the time though still very rare. It has rich brown plumage and green legs like the Australian Brown Bittern (*B. poiciloptilus*). Another water bird I saw here—the Crested Grebe (*Podiceps cristatus*)—is apparently identical with the Australian species. A few birds floating about near us looked very handsome and stately.

Laniidae—Shrikes.—South America is the only continent where there are no Shrikes. Australian lists have usually included our Butcher-Birds (*Cracticus*) in the family. England has one breeding species only.—the Red-backed Shrike (*Lanius collurio*), a small bird, a summer visitor. The hooked bill is characteristic of the family. This bird maintains near its nest a larder in the form of a thorn bush where it impales lizards, large insects, young birds, &c., From this habit it is called the Butcher-Bird and it gave the name to the Australian genus *cracticus*. The new *Checklist* creates separate families for shrike-like Australian birds—*Pachycephalidae* (Song-Shrikes), *Falcunculidae* (Crested Shrikes), *Campophagidae* (Cuckoo-Shrikes) and *Streperidae* (Crow-Shrikes), in which last family the true Australian Shrikes or Butcher-Birds are placed, along with Australian Magpies (*Gymnorhina*). Our well-known Yellow Robins (*Eopsaltria*) with hooked bill and sometimes known as Shrike-Robins, which used to be included in the *Laniidae*, now go with all other Robin genera into the large *Muscicapidae* family.

Regulidae—Golden-crested Wrens—British Gold-crest (*Regulus regulus*). The smallest British bird, a resident. Its nest resembles that of our Yellow-tailed Thornbill (*Acanthiza chrysorrhoa*) in size, appearance and position, being often found beneath the bough of a

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*For Australian records of this Teal see *Emu,* Vol. XXIV., p. 146.

conifer; but it differs from the nest referred to in having the entrance on top and in not having a second chamber. Another link between this bird and our *Acanthiza* is a matter of nomenclature. When Messrs Vigors and Horsfield in 1827 studied a collection of Australian birds they named the Buff-tailed Thornbill *Acanthiza reguloides*. *Reguloides* means like the *Regulus*, this little British bird.

Certhiidae — Tree-creepers. — British Tree - creeper (*Certhia familiaris*). There is this one species only in Britain, resident and stationary in woodland districts, where it lives on the trunks and branches of trees, moving spirally about them like Australian Tree-creepers, of which there are nine species. A brown bird with white throat and breast and curved bill like our White-throated Tree-creeper (*Climacteris leucophaea*) but smaller and with a longer tail—the reverse of this bird in note, having some light "cheep" notes only, very different from the fine, powerful calls of our white-throated species.

Sittidae — Nuthatches. — British Nuthatch (*Sitta europaea*)—In Australia there are no true Nuthatches, but the Sittellas (*Neositta*), of which there are six species, are closely related. The above-named bird is the only Nuthatch resident in England. This name is derived from the bird's fondness for nut-kernels, on which it feeds largely in autumn. The nut is firmly wedged in a crevice in a tree and "hacked" with the sharp bill of the bird until the kernel can be obtained. This bird's method of nesting is unusual—no beautiful nest such as the Sittellas make, but rather a bed of dry leaves in the hole of a tree. Should the entrance be too large, it is plastered with clay until just large enough to admit the bird.

Motacillidae—Wagtails and Pipits.—Our Willie Wagtail (*Rhipidura leucophrys*) is of the Flycatcher family, *Muscicapidae*, and not a genuine Wagtail of the *Motacillidae* family, which belong almost entirely to the Old World. The Pied Wagtail (*Motacilla alba yarrelli*) of Britain, a very common resident species, resembles our Wagtail in many ways. It is of black and white plumage, active and restless, running about lawns and jumping to catch flying insects, all with most graceful movements. It does not hold the tail as high nor swing the body as much as the Australian bird.

The British Wagtails are water-loving birds, and frequent the neighbourhood of pools and streams, particularly the Yellow Wagtail (*M. flava rayi*) a summer visitor, and the Grey Wagtail (*M. cinerea cinerea*) a resident and nearly as yellow as the Yellow Wagtail. I have met no bird in Australia with the same habit of life as the Grey Wagtail. It lives almost entirely by the margins of clear, swift-running streams. I watched a few of them as they flitted and tripped, fairy like, from rock to rock or stone to stone in a mountain rivulet at the Trossachs, Scotland, where the species is more plentiful than in England. It is, perhaps, the most beautiful of Britain's small birds.

Pipits (genus *Anthus*).—There is one Pipit only in Australia—the Australian Pipit or Ground-Lark (*Anthus australis*). The British species are similar birds in colour and in the male's habit of singing in the air. The Pipits are favourite hosts of the Cuckoo in England.

Alaudidae—Larks.—The Skylark of Britain (*Alauda arvensis*) is well-known here. It is plentiful in most parts of England in the neighbourhood of fields and cultivation. The Australian Bush-Larks (*Mirafra*), well-known in parts of Australia but not near Sydney belong to this family and are delightful singers like the British Skylark.

Fringillidae—Finches and Buntings. This is one of the largest families of perching birds, having about six hundred species distributed almost all over the world, but none in Australia. Our many Finches were placed by John Gould in this family but are now included in the family *Ploceidae*, Weaver-Finches, so called from the remarkable woven nest made by some members of the family. There are three sub-families :—*Fringillinae*, (True Finches), *Coccothraustinae* (Grosbeaks), and *Emberizinae* (Buntings), distinguished by the shape of the bill. All have short and stout bills adapted for dealing with various seeds, their principal food. All the *Fringillidae* mentioned below are resident species.

Fringillinae (True Finches). This sub-family includes (*inter alia*) the following birds, which are known to everyone, at any rate by name :—Goldfinch (*Carduelis carduelis*), Chaffinch (*Fringilla caelebs*), Bullfinch (*Pyrrhula pyrrhula*), Linnet (*Acanthis cannabina*), Tree-Sparrow (*Passer montanus*), and House-Sparrow (*Passer domesticus*). All are resident species.

Goldfinch.—This bird seems more plentiful about Sydney than any place where I saw it in England.

Chaffinch—A favourite bird—pretty to look at (especially the male bird) lively in habit, of trustful nature and a constant singer. The strange specific name *caelebs* (bachelor) was given by Linnaeus from his observing in the winter flocks of exclusively male birds.

Bullfinch—The bright rose-vermillion colour of this bird I do not remember in any Australian bird.

Linnet.—This is a popular bird that chirps and twitters gaily. The pretty plumage and pleasing notes of these four Finches make them sought after for cages and aviaries.

Tree-Sparrow—This bird, I believe, is found in Victoria. It differs from the House-Sparrow in appearance by its bright brown crown, white bars on the wing, and black ear-patch surrounded by white, and male and female are alike; in habit, by living as a rule in fields and about the edge of woods, away from houses. It nests often in holes in trees. I found a pair of birds with a nest to which they entered through a round hole in the hollow tree that had been made by a Woodpecker when it was nesting there.

Coccothraustinae—Grosbeaks.—These have extra strong beaks. The Greenfinch (*Chloris chloris*) is said to be plentiful in parts of Australia. I have seen it twice only near Sydney. It is a common inhabitant of the English country-side.

Emberizinae—Buntings.—We have no Buntings in Australia. They are heavier and less active than the true Finches. The Yellow Bunting, commonly known as the Yellow-Hammer (*Emberiza citrin-*

ella) a resident bird, is one of the most widely diffused species of all British birds. I noticed the bird from the shores of the English channel to Northern Scotland, sitting on the top of a furze or other bush or tree and repeating a "trivial and monotonous song."

Reed-Bunting (*Emberiza shoeniclus*).—This is a bird of the waterside especially in the warmer months—a resident. The male has a conspicuous black head and throat.

Sturnidae—Starlings.—One species only (*Sturnus vulgaris*) and seen in clouds in some districts, as in Australia.

Corvidae—Crows.—The well-known Crow family in each of its three sub-families in Britain—*Corvinae*, *Garrulinae* and *Fregilinae*—contains species reminiscent of Australia. All are resident birds.

1. *Corvinae*—True Crows.—They are alike in black plumage and raucous note the world over. The common British Crow (*Corvus corone*) is called the Carrion-Crow. Rook (*Corvus frugilegus*) is the best-known large land bird—plentiful in all parts and conspicuous, feeding in flocks on open grass spaces like Australian Magpies, but in larger flocks. Jackdaw—(*Corvus monedula*).—Crow-like, with back of head and nape grey.

2. *Garrulinae*—Magpies and Jays.—Magpie (*Pica pica*). Jay (*Garrulus glandarius*).—Both very different from the Australian birds called by the same name. Both are of handsome plumage. The British Magpie is longer than the Australian bird by the extra length of tail, which is black with lustrous blue reflections. The Jay is red-grey, with blue on wing. Game-keepers kill both these birds.

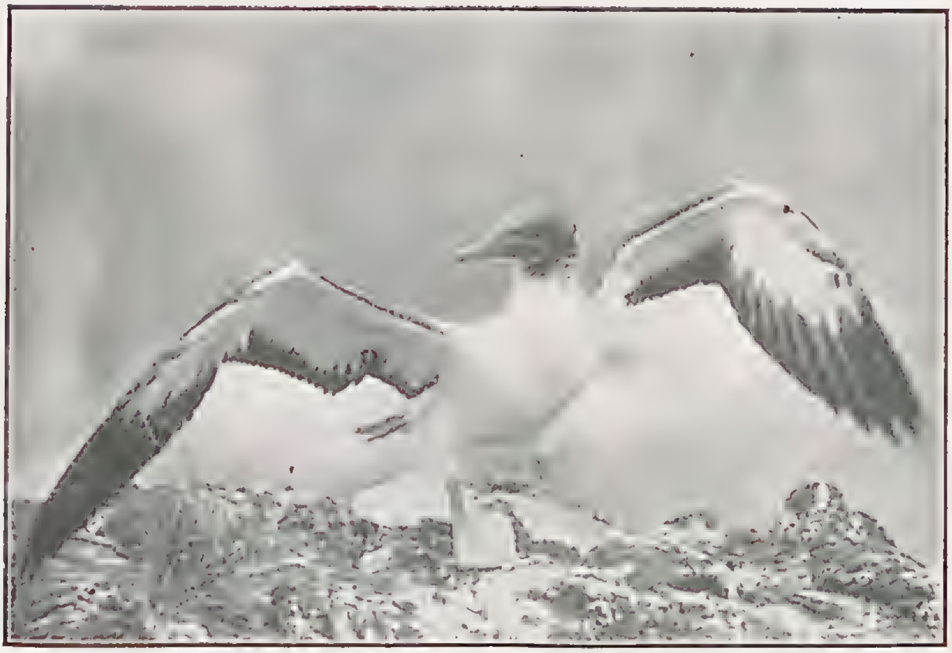
3. *Fregilinae*—Choughs.—Chough (*Pyrrhocorax pyrrhocorax*). The same size as the Australian White winged Chough, but all black and with coral-red beak and feet. The bird is now rare. The only one I saw was in a large aviary at the Zoological Gardens, Regents Park, London.

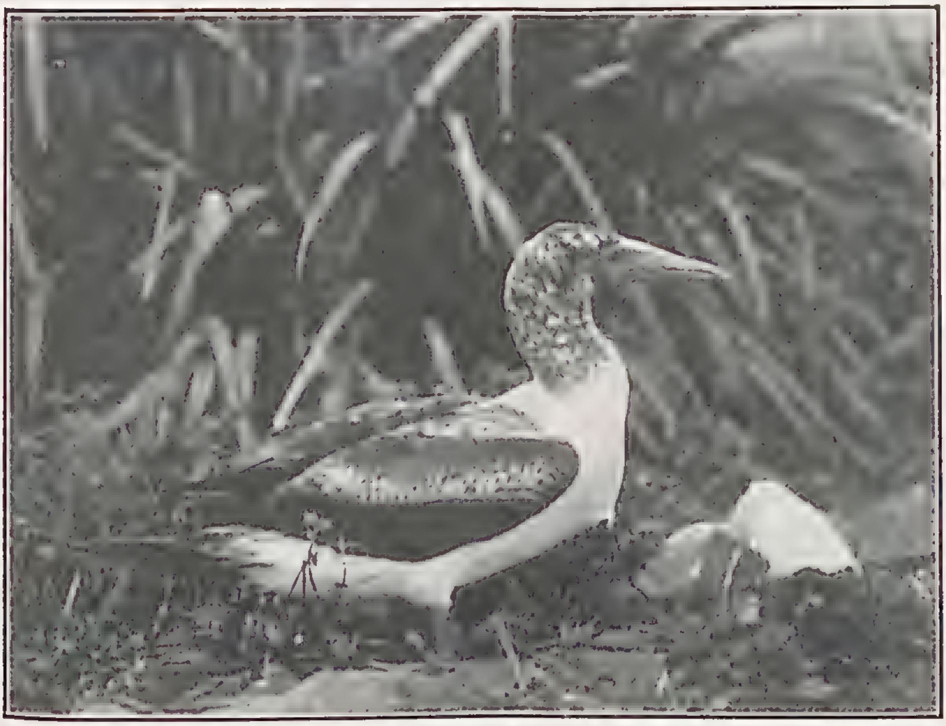
A few well-known non-passerine birds must be referred to:—

Cuculidae—Cuckoos.—The call "Cuckoo" has given the name to the bird in many countries besides England. There are fourteen Australian Cuckoos (none of which calls "Cuckoo") to the one British species (*Cuculus canorus*), which is of the same genus and most resembles the Pallid Cuckoo (*C pallidus*), among Australian Cuckoos. The British bird is a little longer and seems to spread its tail more. Pipits are very frequently the foster-parents. Smaller birds are seen chasing Cuckoos as here.

Alcedinidae—Kingfishers.—The British Kingfisher (*Alcedo ispida*) is the most brilliantly coloured bird in Britain, a resident and stationary species, and the only Kingfisher. There are ten species in Australia. It is the size and figure of the Australian Azure Kingfisher (*Alcyone azurea*) and has brilliant blue plumage with some small spots of lighter blue and chestnut under-parts. It lives by the margins of streams, &c., feeds on small fish and utters shrill notes on the wing. It is really our azure bird with brighter plumage.

Micropodidae—Swifts.—The British Swift (*Micropus apus*) is a summer visitor of similar size and appearance to the Fork-tailed Swift





MASKED GANNETS, BOTH IN IMMATURE PLUMAGE.

Photos. by E. F. Pollock. (See Note, page 140).

NATIONAL [illegible]

(*Micropus pacificus*) that visits Sydney in summer-time, after nesting in the northern hemisphere. The British bird nests in Britain and at morning and evening birds go racing through the air with shrill cries about the tall buildings that contain their nests under the eaves. Both the flight and the note of the birds reminded me of the Little Lorikeets (*Glossopsitta pusilla*) of Australia. At Keswick-on-Derwentwater Swifts and Jackdaws had nests in the same building.

Picidae—Woodpeckers.—The Australian region has no representative of this large and important family whose species range over practically all the rest of the temperate and tropical regions of the world. Britain has three breeding species, all resident. The largest and best-known bird is the Green Woodpecker (*Picus viridis virescens*), which is similar to our Blue-faced Honeyeater (*Entomyzon cyanotis*) in size and in the tint of its green plumage, but has a bright red crown instead of a blue face. Its loud note, somewhat like a laugh, has given the bird the name of " Yaffle," but it is a very short and feeble laugh in comparison with that of the Australian Laughing Kookaburra. The birds make a hole in the trunk of a tree and excavate a nesting chamber for the eggs. The entrance hole looks a perfect circle in shape, and the ground beneath is strewn with small chips chiselled out by the birds' sharp bills.

The Great Spotted Woodpecker (*Dryobates major anglicus*) is smaller than the Green Woodpecker but larger than a smaller spotted species. I saw a nesting box occupied by a brooding bird sitting on young nestlings. It was thought a rare occurrence for a Woodpecker to be using a nesting box.

Charadriidae. Plover-like birds.—One bird, the best known of the family, must be mentioned—the Lapwing or Peewit (*Vanellus vanellus*), a common resident species of the country-side of England that cannot fail to be seen. It suggests the Australian Magpie-Lark or Peewee (*Grallina cyanoleuca*), though it is very dissimilar from that species chiefly, perhaps, because of its pied plumage; but the black is a glossy green black, as is also the long, curling crest, which is unique among British birds. It has a peculiar flapping flight and utters weird melancholy notes from which the name " Peewit " comes. In the spring its brown, spotted eggs may be seen exhibited for sale in London shops as " plovers' eggs," and they are considered delicacies by some people.

BIRD-SONGS COMPARED.

" The charm of the songs of birds is so little a question of intrinsic musical excellence and so largely a matter of association and suggestion and reminiscence that it is perhaps entirely natural for every people to think their own feathered songsters the best." John Burroughs, the great American naturalist, wrote this, and it is well to bear it in mind.

Britain's birds include a number of famous songsters. After listening to them and making comparisons with Australian song-birds it seemed to me that :—

(1) Britain's best singers are common birds and more generally heard than the best singers in Australia.

(2) Britain's songsters have not the variety of song nor the vocal power that the Australian songsters possess.

The following birds would probably be considered the best British songsters in varying orders.—Nightingale, Blackcap Warbler, Song-Thrush, Mistle-Thrush, Blackbird, Skylark, Chaffinch, Redbreast, Willow-Warbler, Wren. Of these, the Nightingale and the Warblers are migrants and are heard for a limited period of the year. The others are resident and quite common birds that frequent the trees, shrubs, and hedges of suburban gardens and sing their fine songs close to the homes and dwellings of man—all excepting the Skylark, which is plentiful in open fields and pastures. This is not so much the case in Australia, where, unless your garden borders the bush, you will not hear much in the way of bird notes except for Sparrows and Starlings. England is different from Australia as a homeland for birds. It is pre-eminently a land of gardens, parks, commons, woods, game preserves, &c., &c., where birds have long had protection and, becoming used to the presence of human beings, have grown more familiar and domesticated than the birds of Australia, where there is so much wild bushland and rough country unpenetrated by man.

Britain's best singing birds (again excepting the Skylark) belong to two families only (Thrushes and Warblers) and have therefore similar songs. Australia has among her smaller birds a number of fine songsters, too many to be enumerated here, contained in many families. They possess an extraordinary variety of beautiful calls and songs, both loud and soft. I heard no notes of British songbirds as loud and vigorous as those of the Australian White-throated Tree-creeper, Grey Thrush, Whip-Bird or Rufous Whistler. Among the larger birds, the songs of the Australian Butcher-Birds and Magpies are said by travellers to be unrivalled amongst bird-music, as is also the wonderful skill in reproducing not only the notes of other birds but also all kinds of farm and bush noises possessed by our Lyre-Birds.

By common repute the Nightingale has always been given first place among song-birds, perhaps rightly, if the quality and variety only of its notes are considered ; but this does not mean that it gives as much collective pleasure as many inferior songsters. Its range is little beyond the south-east corner of England, and it sings from mating-time to the hatching of the young—a few weeks only—after which paternal duties reduce its earlier song to a harsh croak. The Australian bird that most resembles the Nightingale in song is, I think, the Australian Reed-Warbler. John Gilbert, the worker in Australia with John Gould, said that this bird's strain was in many parts like that of the Nightingale. I heard also a soft note with gradual crescendo like the beginning of our Whip-Bird's call ; " Cluck, cluck " notes occasionally as from the Grey Thrush; a long repetition of the one note after the manner of the Rufous Whistler; and all interspersed with various canary-like notes of its own.—truly a wonderful repertoire of song, of fine tone, compass, and flexibility, but with a lack, it seemed, of animation and cheerfulness and with some breaks and pauses. Perhaps it should be said that the Nightingale sings in the daytime as well as at night, and that it is not the only bird that sings at night.

The Song-Thrush has a loud, clear voice and an animated song, consisting of sets of distinct notes, each set being repeated three times usually; then a fresh set is uttered the same way. This is characteristic and unmistakable. The notes are often expressed in a few words, as—"Be-quick, be quick, be quick—could he do it, could he do it, could he do it—Here, here, here—Pretty Dick, pretty Dick, pretty Dick!" A charming and constant songster; heard often, I believe, about Melbourne, but not elsewhere in Australia. No part of its song has the power of the loud swelling note of our Grey Thrush in spring.

Blackcap. This bird is often given next place to the Nightingale as a singer. It has a clear warble, with varied notes of fine tone and compass. The Garden-Warbler's song is almost identical. Both birds are rare.

Blackbird.—This bird's song is well known in parts of southern Australia—a succession of mellow, flute-like notes, though not in great variety, and a loud and harsh alarm note.

Redbreast—Unlike Australian Robins, this bird has really a good song as befits a close relative of the Nightingale and it sings in autumn and winter when birds are rarely heard. It also gives "Tick, tick, tick" notes.

Chaffinch.—Not a brilliant songster, but it sings vigorously and constantly and always the same phrase or ditty. One male will sing against another like our Rufous Whistlers in the mating season. It has a loud "Pink pink" alarm note like our Brown Tree-creeper.

Willow-Warbler.—This small spring Warbler has a delightful little song—soft and sweet, and frequently heard without the bird being seen as it frequents foliage. I always recognised the note at once from its being similar (but superior in tone) to the best song of our Silvereye (*Zosterops*).

Wren.—This little bird has a loud and bright song and likes singing from a fence or rockery.

A COMPARISON OF NESTS.

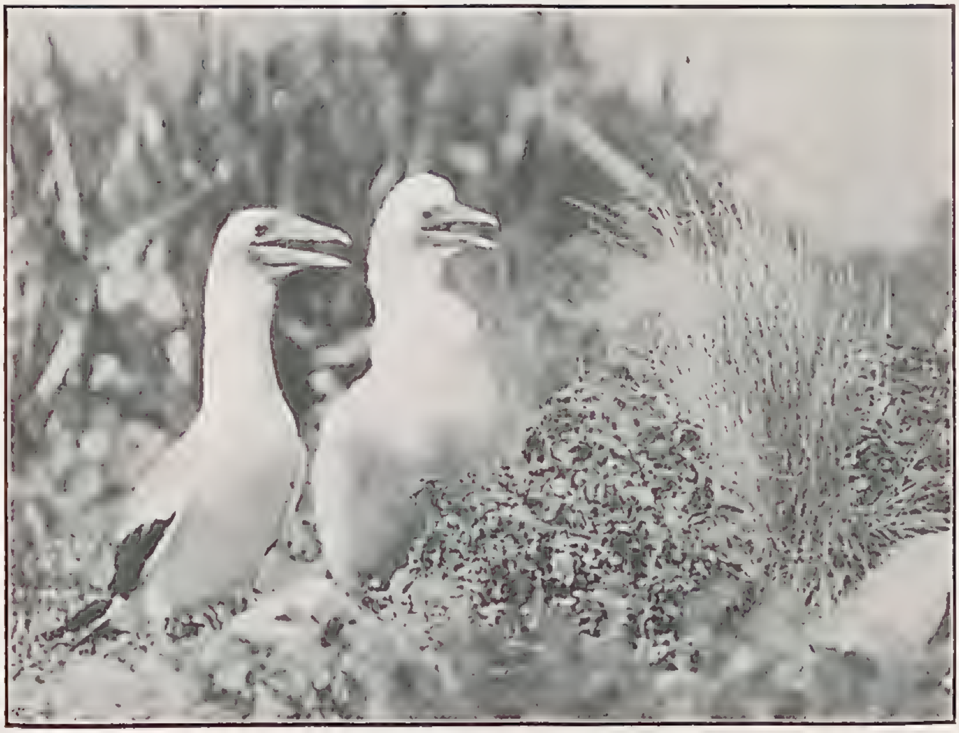
The nests of the smaller British birds differ in general from those of Australian birds in a way that is necessitated by the colder and wetter weather conditions of Britain as compared with Australia. This is manifest when we consider (1) the site or position of nests and (2) the nests themselves.

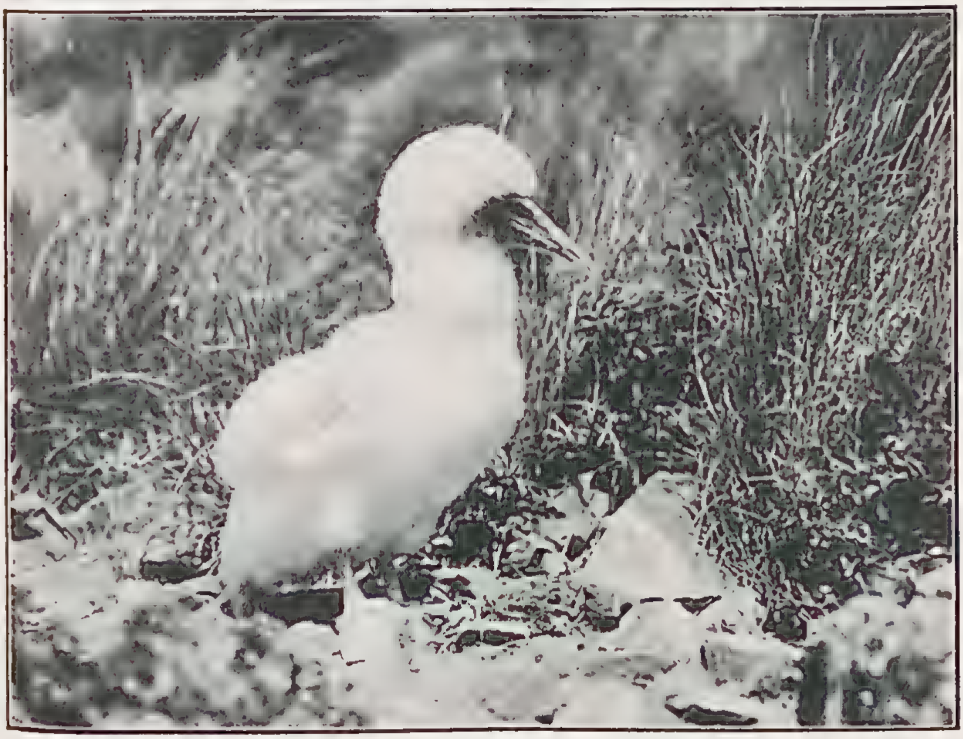
The site chosen is such as to protect the nest well from the weather. More species use holes and hollows in trees, walls, rocks or on the ground for their nests than here, and the birds that make nests in bushes or trees, whether high or low, place them in a well-protected, usually an inside position. It might be noted, too, how frequently artificial nesting boxes are used by the birds in recent years. And the nests themselves are nearly always more compact and weather-proof than Australian birds' nests. Almost all the Tits make warm, cosy nests in hollows of some kind. The Song-Thrush gives greater protection to its eggs and young by lining the cup-shaped interior of the nest with a coating of smooth mud. The Redbreast builds snug nests low in well-sheltered spots, such as among tree-roots or tangled ivy. The Warblers' nests are thick and warmly lined, sometimes domed, and placed as a rule on or near the ground in a thick bush or herbage.

So with the nests of all the small birds—they are thick-sided and strong, and warmly lined with fur, hair or feathers &c. No swinging cradles there, nor hanging purses exposed to wind and rain on the outer branches of trees like the nests of many Australian birds, *e.g.*, *Meliphaga*, *Acanthiza*; no little concave discs like the nests of our *Microeca* and *Lalage*; and no nests so thin and transparent as the nests of our *Artamus* and some of the *Pachycephala*. I saw one nest only of a well-known Australian type, the cup nest resting in a fork or on a horizontal branch like the nests of some of our Robins and other Flycatchers. This was the nest of the Chaffinch, a most beautiful and wonderful structure of felted moss, wool, &c., lined with hair and feathers, decorated with lichen on the outside and often some green moss as used by our Black-faced Flycatcher (*Monarcha melanopsis*). The nests of the Chaffinch and of the Long-tailed Tit or Titmouse are said to be the two most beautiful English birds' nests. The Tit's nest is made of moss and hair closely woven together, oval and domed, with a small entrance near the top. The outside is studded with small, bright pieces of lichen, which reminded me of our Orange-winged Sittella's nests. The inside is profusely lined with feathers. English field-ornithologists count the feathers—one of them told me he had counted 800 feathers from a nest ; but over 2,000 have been obtained.

In the Brent Valley sanctuary, not far from London, I saw a large variety of nests, some of them in nesting boxes and occupied by birds. It is rather a common practice with British bird-lovers to have these boxes placed in reserves, private gardens, &c., &c., and many species use them. A nesting-box is like a rustic letter-box, the front made out of part of a tree-trunk, with a detachable top and a round hole instead of the slit for letters. Wire netting is sometimes placed over them to keep off stoats. Though all ornithologists prefer seeing nests in a natural situation selected by the birds, the nesting boxes do in many cases give facilities for observation of eggs and nestlings of species that nest in inconvenient places.

The number of eggs in the clutches of small British birds seems very large compared with the clutches of Australian small birds' eggs, which (except in the case of Finches) rarely number more than three. Here are the numbers in the clutches of a few common British birds—Tits 6-12, Redbreast 5-6, Song-Thrush 4-5, Tree-creeper 5-6, Wagtails 5-6, Wren 5-8, Goldcrest 7-10. It is not an uncommon occurrence for two birds to lay in one nest. I saw twelve eggs in a Pied Wagtail's nest. Truly, as John Burroughs wrote of England, "This is the country in which to see birds' nests crowded with eggs !"





MASKED GANNETS, ADULT AND YOUNG.

Photos. by E. F. Pollock. (See Note, page 140.)

Birds of Cobark, N.S.W.*

BY W. J. ENRIGHT AND JOHN HOPSON.

FOUR years ago we found ourselves in a beech (*Fagus Moorei*) forest on Barrington Tops, at an altitude of 4,000 feet. In the forest a stream welled from the ground, and then slid down a declivity for about 2,000 feet. We were looking at the Dilgery valley. The stream was the head of the Dilgery River, which, so far, is unsurveyed, and we were told that part of the valley where it flows no white man has yet traversed.

The task from the tableland appeared to us to be an easy one, and in August, 1925, we travelled by car to Rawdon Vale, 34 miles west of Gloucester, thence by sulky to Cobark homestead, 2 miles further. Between Dungog and the junction of Rawdon Vale-Gloucester roads we saw numerous flocks of the Red-Browed Finch (*Aegintha temporalis*) and Spotted-sided Finch (*Zonaeginthus guttatus*). Along the valley of the Gloucester River we saw several flocks of Rosellas (*Platycercus eximius*) and of the Crimson Rosella (*P. elegans*). Consorting with a flock of the latter was a solitary King-Parrot (*Aprosmictus scapularis*). Though this bird was at one time very numerous in the district, this was the only specimen we saw on the trip.

Our effort to traverse the Dilgery was a failure. A waterfall 30 feet high, flanked by steep cliffs, blocks progress two miles above Cobark-Dilgery junctions. The valley above, however, may be reached by climbing the range which flanks it, and again descending. Beyond that again is another waterfall eighty feet high, and we were compelled to abandon the attempt for the time. At the junction Mr. J. P. Geale, who is a friend of the birds, has his home, and has lived there seventeen years. Near his house a Lyre-Bird (*Menura novae-hollandiae*) was sitting on a solitary egg, and not far away was a mound of the Brush-Turkey (*Alectura lathami*).

When we discovered it was useless to attempt the passage of the Dilgery we spent some three days on Cobark Station. This property consists of open forest with flats along the river which were once clad with brush. It fronts the Barrington River, and is traversed by the Arundale River, which is formed by the union of the Dilgery, to which it also has frontage, and the Cobark, all of which are permanent streams with a considerable flow of water. The altitude is from about 450 to 700 feet above sea level.

Following is a list of birds we noted in the three days, on an area of about 3000 acres :—Spur-winged Plover, Wedge-tailed Eagle, Whistling Eagle, Brown Hawk, Nankeen Kestrel, Rainbow Lorikeet, Musk Lorikeet, Crimson Rosella, Rosella, White Cockatoo, Yellow-tailed Black Cockatoo, King Parrot, Laughing Kookaburra, Fan-tailed

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*Cobark (not to be confused with Cobar) is near Barrington Tops, not far from Newcastle and in the rich locality where the 1926 Camp-out of the R.A.O.U. is to be held.—EDITOR.

Cuckoo, Superb Lyre-Bird, Welcome Swallow, Tree-Martin, Jacky Winter, Flame-breasted Robin, Scarlet-breasted Robin, Grey Fantail, Rufous Fantail, Black-and-White Fantail, Whip-Bird, Song-Lark, Yellow-tailed Thornbill, Yellow-throated Scrub-Wren, White-browed Scrub-Wren, Blue Wren, Magpie-Lark, Grey Shrike-Thrush, Black-backed Magpie, Shrike-Tit, Yellow Robin, White-throated Tree-Creeper, Spotted Pardalote, Spine-bill, Noisy Miner, Red Wattle-Bird, Spotted-sided Finch, Red-browed Finch, Olive-backed Oriole, Satin Bower-Bird, Pied Bell-Magpie, Crow.

Many of the birds were noted feeding in the small flower-garden in front of the homestead, and others in the little orchard adjoining the house. The run had been judiciously cleared in the first instance, but that left insufficient food for the opossums, which destroyed many of the remaining trees. Many birds must on that account have been driven away.

Stray Feathers.

New Bird for Australia.—At a meeting of the R.A.O.U., held at the National Museum, Melbourne, on August 4th, Mr. A. J. Campbell, on behalf of Mr. H. L. White, Belltrees, Scone, N.S. Wales, exhibited a new sea-bird for Australia. It was washed up dead on Cottesloe beach, Western Australia, on June 6th after a storm, and was forwarded by Mr. F. L. Whitcock. The bird is known as the Kerguelen Petrel, or Fulmar (*Pterodroma brevirostris*). It is a neat bird in general dark drab-grey plumage with a slate-grey tinge, and is about the size of a Mutton-Bird. Expeditions to the south have met the species in sub-antarctic regions, and it is known to breed on Kerguelen Island, where Mr. Robert Gall found it in burrows, in Greenland Harbour, January 25th, 1898. The same storm washed up several bodies of Prions.

* * *

Aboriginal Bird-names.—Further to the list of native names of birds given in my paper on the Pallinup Estuary in the last number of *The Emu*, the names of a few more species had also been ascertained but as they were not observed at the estuary at the time of my visit, were not recorded. As they may be of interest I give them here :—Mallee Hen (*Leipoa ocellata*), Gnow (the *gn* represents a sound which may be likened to that produced when starting to pronounce the word " new ") ; Bronze-wing Pigeon (*Phops chalcoptera*), Gnampion ; Western Swamp-hen (*Porphyrio bellus*), Moolar ; Southern Stone-Plover (*Burhinus magnirostris*), Weeloo ; Bustard (*Eupodotis australis*), Coolie ; Barn-Owl (*Tyto*), Minnar ; Red-tailed Black Cockatoo (*Calyptorhynchus naso*), Carrar ; Frogmouth (*Podargus strigoides*), Cumbine ; Miner (*Myzantha*), Puer ; Crow (*Corvus coronoides*), Warrdong.—D. L. SERVENTY, East Cannington, W.A. (2/8/26).

A New Bird for the Australian List.—In *The Emu*, Vol. XXV., p. 212, Miss J. A. Fletcher, R.A.O.U., describes a large Penguin which she saw on the beach at Eaglehawk Neck, Tasmania, 1925, apparently in March. Mr. G. M. Mathews has pointed out to me that there is only one species of Penguin which would agree with Miss Fletcher's description, *viz.* the Gentoo or Rock-hopper Penguin (*Pygoscelis papua*). Miss Fletcher describes the bird as having " a conspicuous semicircle of white part way round the neck on the upper surface, just below the nape." The Rock-hopper has " a white stripe across the upper part of the head from one eye to the other " (Brit. Mus. Catalogue). This conspicuous mark is actually above, not below, the nape, but it might be difficult to judge its exact position in the living bird. I think, then, that there can be little doubt that we can add *Pygoscelis papua* to the list of Penguins which occasionally visit Tasmania. In view of the known distribution of the species this is not surprising. The Rock-hopper breeds on Macquarie Island and is known as a visitor to the southern coasts of New Zealand.—W. B. ALEXANDER, England.

* * *

The Toll of Bush Fires.—The thickly-timbered fern-tree gullies of the Dandenong Ranges, Victoria, have always been regarded as an ornithologists' paradise. As far back as we can go in the history of our comparatively young country those enchanting hills have been the haunts of numerous rare and interesting birds. There, in the depths of the forests, the Lyre-Birds built their nests in secluded nooks overlooking crystaline mountain streams, while the Mountain Thrushes, Rose Robins, Pilot-Birds and Helmeted Honey-eaters rejoiced in the shade of the gigantic gums.

But in many parts of the ranges these scenes have changed. No longer does one hear the Whip-Bird's crack or *Menura's* varied calls. Where have they gone and what has caused the change ? Last summer bush-fires raged through these beautiful forests, leaving desolation in its wake. A few weeks ago I visited a gully which had been burnt out ; so complete was the destruction that scarcely enough material remained to complete the building of a small bird's nest.

During a similar visit prior to the fire, 47 species were observed, but on this occasion only fourteen were seen. [It must be remembered, however, that migration was at its height during the first-mentioned visit]. The most prominent absentees were Whip-Birds, Pilot-Birds, Mountain Thrushes, and Honey-eaters of many kinds. During the night neither Owl nor Frogmouth broke the deathly silence ; nor did opossums or squirrels sport in the dim moonlight. How changed, how different to the days of old ! Soon, perhaps, under the kiss of Spring, the trees will be re-clothed in their leafy green garments, and sparkling streams will glide by the tree-ferns. But what of the birds ? Will they be replaced so readily ?—N. J. FAVALORA, Melbourne, (16/7/1926).

Winter Swallows.—The sporadic appearance of the Welcome Swallow (*Hirundo neoxena*) in winter-time is curious. This autumn all the Swallows appeared to clear from the district before the end of March, and not a bird was sighted until mid-June. On the fifteenth of that month, just a week before the shortest day, I noticed a pair in spruce plumage flitting to and fro under the shop-verandahs in the town, and inspecting the high wooden ledge where the nests are usually built. Had this pair been over to the mainland for two or three months, and then felt an impulse to return, or had they been lying up in a quarry-crevice or hollow tree until the winter sunshine of mid-June tempted them out ? They were, at any rate, in plump condition, and had not been on starvation rations.

Exactly the same thing used to puzzle good old White of Selborne about a century and a half ago ; he would note the departure of all the Swallows and House-Martins in his district towards the end of September, and then, after not sighting an individual for six or eight weeks, suddenly, during a mild spell in November, a pair or two would make their appearance, and flit about as if they had never quitted the neighbourhood. Small wonder that, keen observer as he was, he nevertheless was inclined to favour the theory that some, at any rate, of the family hibernated in caves or hollows, and came out now and again in favourable spells, to pick up insects enough for sustaining life until spring-time.

After noting the pair in this locality, when the weather was mild and sunny, we had a few unpleasant days to follow, and I have not since seen them. On the same day, a Fantailed Cuckoo (*Cacomantis flabelleformis*) in fine plumage, with plenty of rusty-red on throat and breast, was sitting on a small tree on Victoria Parade, which borders the Mersey River. A Crow-Shrike (*Strepera arguta*) has taken up his abode there, too, and a few days ago was sitting on a privet-bush gulping down the berries while I passed within a few feet of him. —H. STUART DOVE, West Devonport, Tasmania. (3/7/26).

* * *

Spotted Bower-Birds at Home.—It has generally been observed that the Spotted Bower-Bird (*Chlamydera maculata*) is very wary as regards the sites of its bowers, or playgrounds, and its nests. Yet I watched one of these birds build both bower and nest. The former was situated under low-growing branches of a cumquat tree, not thirty yards from a much-frequented verandah of the Tortdale Station homestead, Central Queensland. It was built of stiff grass and small sticks, and was in the form of a U. This was, of course, the work and property of a male bird ; nor were any others allowed in the playground. Other male intruders he chased from the vicinity, but admiring females were allowed to watch his parade from neighbouring branches.

His play consisted of hopping backwards and forwards through the bower, dragging his wings and keeping up an unending stream of hissing and mimicing. Often one of the many articles, such as bits of glass or snail-shells, with which the bower was stocked, would be carried from one side to the other and then dropped. This bird's favourite colours seemed to be green and white, and all shining metal objects were treasured. Small green berries, green bottle-glass, and white snail-shells were the commonest things in the collection.

The nest was a very rough structure built at the top of a high brigalow tree, a couple of hundred yards from the house. It consisted of dry twigs, and the sky could easily be seen through it. The eggs had practically no protection, but were well camouflaged by the broad wavering lines of dark brown and purple, which were so numerous as to cover nearly the whole shell. As is to be expected under these conditions, the eggs are large considering the size of the bird.

These birds, though destructive in a garden, are extremely interesting to study, and it would be well worth while if a member of the R.A.O.U. could spend some time in procuring good photographs illustrating some of their habits.*—J. A. ARCHER, Southport, Queensland (31/7/26).

* * *

Nesting of Eagles.—I have received a most interesting note from Mr. Russell Le Walf concerning the Bald Eagle of America. In a letter dated June 22nd, 1926, he writes :—

" The day before I visited the nest the wind blew it down, killing the three young Eagles about two weeks old. Last year the nest fell down owing to its great weight, and three years ago the male was shot, but the female returned with a new mate and proceeded with the raising of the family. The birds have nested there (Vermillion, Ohio, U.S.A.), for more than 50 years. We are all anxious to know whether or not they will return."

In a later letter (July 13) he says :—" I am glad to say that the Eagles have returned to their nesting grounds, and I hope they will build again."

It would be most interesting to know if our Wedge-tailed Eagles have been known to remain in the same locality after having experienced such set-backs. Possibly some of our members who are well acquainted with their habits may be able to throw light upon the subject. Only once have I known of a nest to be re-occupied after one of the Hawks had been shot. The incident took place many years ago at Castlemaine, when a Goshawk (*Astur fasciatus*) was shot from a nest in an iron-bark tree. The following season a pair of Goshawks reared three young in the same nest. We thought at the time that the remaining bird must have procured another mate, but, of course, it is quite possible that another pair of birds used the old nest.—N. J. FAVOLORA, Melbourne (12/8/26).

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*Mr. D. W. Gaukrodger, R.A.O.U., of Queensland, has photographed the Spotted Bower-Bird, both at the nest and in the playground.—EDITOR.

The Masked Gannet.—The photographs appearing in this issue of the Masked Gannet (*Sula cyanops*) were taken on the Admiralty Islets, adjacent to Lord Howe Island, in March last. Although most of the young birds are said to hatch out in October and November, I found youngsters of almost all ages, from fluffy balls of about a month old to immature-plumaged birds just ready to fly, when I visited the islets in February and March. The nests invariably occupied elevated positions near the summit of the island, the parent birds continually planing down with food for their ever-hungry offspring. Disturbed but seldom, the birds are exceedingly tame. I was informed by the Lord Howe islanders that the Masked Gannet invariably lays at least two eggs, occasionally more; but in no case did I observe more than a single chick in each family. This seems to bear out the conclusion arrived at by other observers, that these birds deliberately limit their families to one.—E. F. POLLOCK, Strathfield, N.S.W.*

* * *

White-backed Swallows in the East.—I was deeply interested in a note by Mr. M. Thompson in *The Emu* (July, 1926) in which he mentions having seen the White-backed Swallow (*Cheramaeca leucosternum*) in the Upper Hunter valley.

Nearly two years ago my attention was drawn to a flock of White-backed Swallows on the Clarence River, some four miles above Grafton. This was a surprise to me, as my previous knowledge of these birds had been only in the Western districts. The part of the Clarence where they are to be seen is very interesting, for the banks have broken away, leaving very high earthen walls which have become a favourite nesting-site for many earth-burrowing birds.

At low tide one could scramble down a narrow track, and, standing on the strip of sand exposed, look up at the steep, broken banks where numerous feathered cave-dwellers had made their homes. In largest numbers of all were the tunnels of the Rainbow-Bird (*Merops ornatus*), and the dainty White-backed Swallows built in their holes, not going to the end of them but scooping out a little cave at one side and building their grass nests there. This flock of birds was curiously local in its habits, seeming only to be found about one spot on top of the steep banks above-mentioned. I do not know how long they may have been there before I was first shown them, but to my certain knowledge they have been there ever since, making no attempt to leave during either last winter or this.—FLORENCE M. IRBY, Casino, N.S.W. (1/8/26).

* * *

The Currawong in Captivity.—Before I heard the musical call of the species breaking the silence of great river gorges, I was introduced to a Pied Currawong, born somewhere on Barrington Tops (N.S.W.). As a fledgling, the bird was brought from the plateau to his home at Eccleston by Mr. John Hopson, my companion

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*See Plates 21 and 22.

"MAGGIE," THE CURRAWONG.
Photo. by Charles Barrett.

BLACK-HEADED PARDALOTE AT NEST IN STRAWBERRY-BARREL.
Photo. by (Miss) Hilda Geissmann.

NATIONAL MUSEUM MELBOURNE

of a trip in January 1926. It has become a pet of the household, and enjoys large liberty. With flight feathers of one wing clipped slightly, "Maggie," as the bird is called, roams about garden and paddock, parades the verandah and the roof, and wanders indoors pretty freely. He is a cunning, quaint, and delightful bird, on the very best of terms with the home folks, but rather suspicious of strangers. He acknowledged my right, as an invited guest, to be at the homestead, but was irresponsive when I sought to be as friendly as his owners. Still, he was keenly interested in the new-comer —and his belongings.

A loud inquiry wakened me on the first morning at Mr. Hopson's home. It is a wearisome journey from Paterson to the green hills of Eccleston, and my sleep had been sound. At sunrise, it was disconcerting to be aroused by insistent cries of "What ?——what ?——what ?" ; and to see a black form perched on the rail at the foot of one's bed. I thought of Poe's raven. It was "Maggie," a noble specimen of *Strepera graculina*. His note sounded, to the sleeper wakening, like the word "What," but soon clearly resembled "Wok." Presently my visitor broke into song, or whistling rather, informing me tunefully that there was no luck about the house, there was—he did not complete the lines.

Thereafter "Maggie" was frequently my shadow. He followed me, came to inspect my collections, and usually announced his arrival with a cry of "Wok." After the return from Barrington, one morning, I left many fine beetles on a sheet of paper, out in the sunshine, to dry. The Currawong, when my back was turned, hopped from a hiding-place, snapped up one of the rarest specimens, and was away with it in a second. "Wok !" he called gleefully, "Wok !"—C. BARRETT, Melbourne.

* * *

Australian Birds and British Artists.—The 1926 Exhibition of the Royal Academy suggests that British artists appreciate the beauty of some of the Australian birds with which they are familiar, since out of half a dozen pictures in which birds figure prominently four include Australian species. In H. A. Budd's picture "The Bird Shop," amongst the denizens of cages a Galah is easily recognised ; and the proprietor is seen through the doorway reaching up to a Cockatoo on a perch. Miss M. Gear's "Fine Feathers" shows two Macaws, a White Cockatoo and a Pink Cockatoo in a bower of cinerarias and other flowers. Miss A. Airy shows a picture entitled "The Man with the Macaw." The man is obviously Spanish and has a Macaw perched on his left arm, whilst in his right hand he holds a slice of melon on which sits a Budgerigar ! To an ornithologist this seems decidedly incongruous, but the incongruity is much worse in H. Harvey's picture "Rima." Hudson's famous story deals very precisely with the locality in which Rima lived, which was that part of Venezuela bordering on British Guiana. The artist has depicted Rima in a tropical jungle with Humming-Birds hovering around her, and perching on her right hand is a bird quite alien to this South American scene—an Australian Galah ! The Royal Academy has Professors of

Anatomy and Chemistry among its officials. Surely it should also appoint a Professor of Biology.—W. B. ALEXANDER, C.F.A.O.U., England.

* * *

Color Phases of Finches.—In Volume XII. p. 5 of. his *Birds of Australia*, Mr. G. M. Mathews describes *Donacola castaneothorax* and *D. flaviprymna*. The latter he ascribes to north-west Australia and the Northern Territory, and the former is noted at various places from northern Australia to northern New South Wales. A species of *Donacola* first appeared to my knowledge in the Maitland district in 1883, when hundreds of them were breeding in the bullrushes along the Hunter River adjoining the town of West Maitland, and since then they have been noted at irregular intervals along the lower Hunter and Paterson Rivers. One hesitates to differ from such an authority as Gould, who states that *D. castaneothorax* is distinct from *D. flaviprymna*, but I have frequently seen the young of *D. castaneothorax* go through a stage of plumage development wherein it strongly resembles *D. flaviprymna* as described by Gould.

In April last I procured four young *D. castaneothorax* which had no signs anywhere of the black colors which appear on mature specimens, but now (19/7/26) are fully colored. Four or five weeks ago they were colored like the specimen shown in Plate 566 of Mathews' book.

Mathews states that the purity of the captive specimens is not certain, as these Finches interbreed, and the bird-catchers stated they were found together in flocks. If that is to be accounted as a reason for my experience, how is the want of purity of specimens so far south as the Hunter River to be explained? I do not know where the captive birds in my possession were taken, but I have seen wild specimens similarly plumaged about West Maitland.

D. flaviprymna has a wider range than Northern Australia. Mr. S. A. Hanscombe, R.A.O.U., informs me that he has noted *Donacola* on the lower South Coast of New South Wales. He does not say what species.—W. J. ENRIGHT, West Maitland, N.S.W.

* * *

The White-fronted Heron.—Reading Mr. M. S. R. Sharland's interesting article, "The Haunts of the Heron" in *The Emu* for July, I wondered if I might venture to supplement his observations with a short account of a tame Heron (*Notophoyx novae-hollandiae*) which, although its liberty was in no wise restricted, took up its abode with us for over three years.

During our very wet season, when numbers of Herons, Ibises and other water-fowl were about the swamp behind the house, a pair of "Blue Cranes" built a nest high in a gum tree—so high that we had no chance at all of seeing the beautiful blue eggs that we knew it contained. But later on, when they had hatched, we used to see *four* clumsy-looking heads with great strong beaks poked over the edge; and whenever the parent birds drew near the little ones made as much din as a party of baby Magpies.

One night a furious gale arose, strewing the ground with fallen boughs, and next day we found a forlorn-looking little object stalking dejectedly by the side a of dam, near the nest. One of the four had evidently been blown out. Perhaps times were hard and there was one too many. (Possibly, as Mr. Sharland suggests, the usual clutch is but three). Certain it is that the parents never seemed to miss or worry about the waif, so we carried her home and put her down in the yard amongst a varied collection of fowls and cats and dogs; and from the first she held her own. We fed her with worms and we called her " Bluey."

No wonder that her relatives made no outcry about her loss, and made no attempt to seek and reclaim her, although they lived within sight; for such an appetite as hers I have never seen!

Everbody on the farm dug worms , and still, like Oliver Twist, she croaked for more. Later on she took to a more varied diet, and preferred raw meat to anything else. She never ran—she was far too dignified for that—but she would stalk hurriedly to the kitchen verandah whenever she heard the click of the meat-safe door, pecking angrily at any luckless cat or dog who might chance to be attracted by the same alluring sound. She had an extraordinarily keen sense of taste, and if given a piece of salt beef, or anything highly flavoured or with salt or pepper on it, would carry it gingerly in her beak to her water-dish, and wash it vigorously. Anything dry or hard was treated in the same manner, being soaked in the water until soft. " Bluey " had a curious aversion to having her photo taken, and would stalk with head erect and an expression of injured dignity, all round the garden and through the house just in front of the photographer who might be imploring her to stay still.

She lived with us for over three years. Sometimes she would fly away for the whole day, but almost invariably she returned in the evening, and was particularly fond of roosting on the back of a cane lounge on the verandah, scolding vigorously if anyone happened to be sitting in it. Her chief amusement was building nests. These usually consisted of a few dry sticks, which the bird would painstakingly place on the verandah where no one could help walking over them. It never seemed to occur to her to build in a tree. At times, too, she would dance. This was usually shortly before rain, or during damp weather. Slowly she would circle round and round with outstretched wings.

But there came a sorrowful day at last when " Bluey " did not return from one of her excursions. She may have been seized upon by some strolling fox and carried away to its den, but probably she heard, and could no longer resist, the mysterious Call of the Wild.—FLORENCE M. IRBY, Casino, N.S.W. (1/8/26).

* * *

The Rock-Warbler.—The able and very interesting monograph on the Rock-Warbler (*Origma rubricata*), by Mr. K. A. Hindwood, R.A.O.U., in the July issue of *The Emu*, vividly recalls my experiences of this remarkable bird, which I first met with in schooldays at Mittagong, on the Great Southern Railway, and about eighty miles south of Sydney.

The Rock-Warbler, though not numerous about Mittagong, was usually to be found in the deep gorge between the mountains known as Gog and Magog, which overlook the town. The bird was known locally as " Rock-Robin." In the side of one of these mountains are long-abandoned coal-shafts, partially filled as a rule with black, ice-cold water, and to the beams of which Rock-Warblers attached their long, pendant nests, practically safe from the attacks of any natural enemies of the bird except perhaps the Boobook and Powerful Owls, both of which occurred about Mittagong.

The position of the nest, when built in a coal-shaft, was so far above the water that a marauding monitor, or lace lizard—" Goanna " in bush parlance, and arch-enemy of many birds—could not reach it by swimming, while the steep sides of the shaft were so dank and slippery that the reptile could not ascend them.

Into these gloomy and somewhat dangerous shafts (which were liable to cave in suddenly), disregarding the icy temperature of the water, we schoolboys penetrated, proudly adding the Rock-Warblers' pure-white eggs to our collections.

In other instances the nest was found depending from overhanging cliffs, safe from the lace lizard, but quite open to attack by Crows and Hawks.

I next observed the Rock-Warbler many years afterwards (about 1903), on the yellow sandstone cliffs at the northern extremity of Balmoral (or Hunter's) Beach, near Sydney. The bird was even then rare in that quarter, and since this suburb has become much more thickly settled and built over, has probably disappeared from it.

As regards the Rock-Warbler's limited habitat, as delineated by Mr. Hindwood, I may mention that, about twelve years ago, I observed a pair of Rock-Warblers at the foot of cliffs above Araganui Beach, about midway between Bermagui and Tathra, on the South Coast of New South Wales. A little to the south of this beach lies the great bluff known as Bunga Head, the seaward face of which, timbered and scrub-covered in part, would afford an environment well suited to the Rock-Warbler. I should not be surprised if the Rock-Warbler were also to be found about the cliffs and gorges of the Dromedary Mountain, a few miles north of Bermagui.—H. V. EDWARDS, BEGA, N.S.W.

* * *

From Magazines, Etc.

A Strange Messenger.—While renovating an old exhibit of sea-birds in the Australian Museum (Sydney) recently, Mr. Henry Grant, taxidermist, came upon a clipping from the *Queenslander* (Brisbane) of October 15, 1887. The scrap of paper formed portion of the filling of some false rock-work on which the birds were standing and the story it told was as follows :—

The finding of a remarkable message from the sea, in the shape of a band fastened round the neck of an albatross, is thus reported in the *West Australian* of 21st September :—" It often happens that strange messages reach land from people in distress at sea, but none could be more extraordinary than that which reached the shores of this colony on Sunday. A boy in the employment of Mr. V. E. Nesbit, of Hay-street, Perth, saw a dead albatross lying on the beach of North Fremantle. On going up to it he observed that the bird had only recently expired, the body being still warm. He also noticed that round its neck was fastened a tin band, a little more than 2in. wide. Taking off the band he found that it was covered with letters punctured into the tin. Being unable to make anything out of the inscription, he took the band to his employer yesterday morning. Mr. Nesbit at once saw the importance of this message from the sea, and took it to the office of the Colonial Secretary in the hope that the Government might take action in the matter. The message on the band is as follows :—' 13 naufrages sont refugees sur les iles Crozet, 4 Aout, 1887.' Translated, this reads as follows :—' 13 shipwrecked sailors have taken refuge on the island Crozet, 4th August, 1887.'...The Crozet Islands are a volcanic group in the south of the Indian Ocean, and about 1,500 miles to the south-east of the Cape of Good Hope. The albatross, probably impelled by fear created by the tin band, must have travelled on and on until it dropped dead on the North Beach, a point over 3,500 miles from the Crozet Islands. The Government, we understand, cabled to England the contents of the albatross's message." In a subsequent issue of the same paper a correspondent writes on the subject as follows :—" Everyone must have been astonished at the extraordinary incident of the albatross found on the North Beach carrying its message from the sea. Perhaps the most remarkable part of the incident is the question—what could have induced the bird to leave its haunts and fly 4000 miles straight away ? This must have been the first thought of many. An interview with the discoverer of the bird, however, sets the question at rest. Upon being asked if the tin band was fixed tightly on the neck, he said, ' Not very ; it was low down and the feathers were rusted ; but I found a broken shell with the fish in it in the bird's throat above the band.' Here then appears to be the secret. This shell was probably taken by the bird from its haunts at the Crozet Islands, and being unable to swallow it, discomfort and pain caused it to wander—as is usual with all animal life—until it reached our shores. It may be safely assumed that had the band of tin caused no obstruction, the bird might have carried the message round its neck in the Southern Ocean for the next half-century or more."*

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*This strange incident is quoted by Mr. Wm. Beebe in his latest book *The Arcturus Adventure* (pp 102-103)—Editor.

Review.

WHENCE CAME THE BIRDS?

["The Origin of Birds." By Gerhard Heilmann, with two plates in colour and 140 photographs and text figures from drawings by the author. London, H. F. and G. Witherby, 326 High Holborn, W.C. 1926.]

The author, a professor of zoology at the University of Copenhagen, has produced a fascinating book of 211 pages. It begins with a detailed study of the two remarkable long-tailed, toothed birds of Jurassic age. The specimen preserved in the British Museum is the well known *Archaeopteryx lithographica.* The specimen in the Berlin Museum is referred to as *Archaeornis siemensi.* The first was found in 1861 in the lithographic quarries at Solenhofen in Bavaria and the second in 1877 at Eichstatt, also in Bavaria.

In the first of the four parts of the book, the author discusses fully the relationships of these long-tailed, toothed birds. Apart from feathers—a sure mark of a bird—these two Jurassic birds are shown to be closer in structure to reptiles than to living birds. The American toothed fossil birds *Ichthyornis* and *Hesperornis*, are then considered; though toothed, they have the short tail and plough-share bone of the modern bird.

In part II., embryology is called to the aid of the investigator and a remarkable series of drawings shows the origin and traces of the different organs and structures in birds, as well as in many reptiles. A wealth of clear diagrams shows that the individual, during its development, recapitulates the life history of the race, that is, that "ontogeny repeats phylogeny."

One striking diagram shows the very different adult heads of a fowl, a crocodile, a Sooty Tern, and a lizard contrasted with the very similar heads of the embryos of these animals. Equally striking is the diagram of a cod's heart and gill-slits compared with the same organs in the embryo of an electric ray, a Sooty Tern, a fowl and a shark; all bear a striking similarity.

In part three "Some anatomical and biological data" strengthen the claim for a close relationship of birds to reptiles.

The discussion of the "digital claws and retardation of primaries" in the South American Hoatzin as well as in the common chicken is well illustrated by photographs and diagrams. The Hoatzin using the claws of the first and second fingers for climbing would be inconvenienced by long wing feathers which would interfere with the use of the claws. The similarly delayed development of the chief flight feathers in the chicken then becomes understandable. The origin of sense organs, sexual organs, secondary sexual characters, and other organs and structures is also discussed.

The useful summaries indicate that the professor is a skilful teacher presenting clearly and recapitulating forcibly the chief points and results of his investigations.

The author considers that bipedal locomotion in the ancestors of birds came before arboreal life with a gradual lengthening of leaps from branch to branch. He considers that it was due to the specialisation of the hind limbs that mainly the fore-limbs and the tail were used for increasing the resistance of the air during the gliding fall. This resulted in the production of new animal forms with arm-flights, but these were " patagium-flutterers " rather than true fliers.

The origin of feathers is suggested as being due to the friction of the air having caused the outer edges of the scales to become frayed. The frayings then gradually changed into still longer horny processes, which in course of time became more and more feather-like, until the perfect feather was produced. From wings, tail and flanks the feathering spread over the whole body.

The lengthening of the penultimate joints of the fingers was attended by the using of the claws for climbing. The author considers that this elongation has been favourable to the subsequent development of the wing.

The fourth and final part is devoted to a study of the probable bird ancestor—the Proavian. It is shown that this must have been a primitive generalised form and that the *Pterosaurs* and the Predentates including *Iguanodon* and other so-called " bird-footed reptiles " will not do. The author considers the *Coelurosaurs* were closer, though the absence of any trace of the wishbone deprives them of the chance of being the ancestors of birds. He finds, however, that the extinct reptiles known as *Pseudosuchians* have claims. He states from the investigations " here set on foot it is evident that all our requirements of a bird ancestor are met by the *Psuedosuchians*, and nothing in their structure militates against the view that one of them might have been the ancestor of birds." He considers it possible that later fossil finds will furnish us with a *Psuedosuchian* still more allied to birds. " It would be a stroke of good luck hardly to be expected if, amongst the many thousands of reptile species living in the Triassic, the very ancestor of the birds should have been preserved."

The book is remarkable for several features, including :

1. The close examination of the various structures of birds and their detailed comparison with similar structures in other animals.

2. The excellent idea of modelling the whole structure from the part visible in the fossil is a great help to the student. Many of the illustrations are photographs of such models.

3. A charming and unusual employment of the scientific imagination in the reproduction of models of the animals themselves and of the conditions under which they lived.

Though truly scientific and a classic on the origin of birds, of great interest to all ornithologists, the book is so fully illustrated and so brightly written that even the general reader will derive pleasure and profit from its perusal.

Correspondence.

AN IMPORTANT DATE.

(To the Editor).

Sir,—I notice that the Check-List Committee have retained (p. 53) the specific name of *gigas*, Boddaert, for the Laughing Kookaburra, in preference to *novae-guineae*, given to the same reference by Hermann.

Boddaert's work is dated 1783 and the preface is dated December 1st. Hermann's work was reviewed in " Göttingische Anzeigen von gelehrten Sachen " for November 15th 1783. That is to say, it was published in Strassburg, sent to Göttingen, reviewed, and the review published, at least 15 days before Boddaert signed the M.S. preface to his work, that was about to appear.

So the correct name of the Laughing Kookaburra is *Dacelo novaeguineae* (Hermann) (*Tabula Affinitatum Animalium* p. 192 (note) 1783 ; before November 15th).

One of the synonyms is *Alceido gigas*, Boddaert (*Tabl. Planch. Enlum.* p. 40, 1783 ; *after* December 1st).

Foulis Court,
Fair Oak,
Hants, England,
July 26, 1926.

Yours etc.,
GREGORY M. MATHEWS.

SCIENTIFIC NOMENCLATURE.

(TO THE EDITOR).

Sir,—I would like to draw attention to several anomalies in the *Official Checklist of the Birds of Australia* (Second Edition), just to hand. It is splendidly compiled and must have entailed an enormous amount of work, and our thanks should be justly due to the authors for the care and attention they have bestowed upon it.

Mr. Wolstenholme, in dealing with the derivations, has done a great service to ornithology and I join with him in regretting many misspellings, due to original errors, which are at variance with the derivations yet are allowed to stand.

No. 121 reads *Sterna anaetheta*. The specific name here is undoudtedly misspelt, and should be *anaestheta*, from the Greek *anaisthetos*, meaning " stupid."

The casual visitor marked with an asterisk between Nos. 138 and 139 reads *Charadrius hiaticula*. There seems to be no doubt that the later word has been wrongly spelt for *hiaticola*, derived from the Latin *hiatus*, meaning " a cleft," and *colere*, " to inhabit."

No. 326 reads *Halcyon sanctus*. Why should *Halcyon* be masculine when both *Alcyon* amd *Alcedo* are feminine nouns, and both the first and second are derivatives from the Greek *Alkuon*, which is feminine ?

No. 342, *Chalcites basalis*. Why should this be placed in a different genus to the other Bronze Cuckoos, all of which are hardly distinguishable except on handling, and whose habits are almost identical ? There can hardly be any structural difference between this species and the other genus *Lamprococcyx*, sufficient to warrant separation into two genera.

No. 505, *Origma rubricata*. The generic name here is almost certainly an error in spelling and meant for *Orygma*, from the Greek *Orugma*, " a hollow, cave, or tunnel "—a name especially apt for this bird, which selects these situations for nesting.

No. 585 reads *Plectorhyncha*. This is obviously an error of spelling. The derivation is from the Greek *plektron*, " A spear point," and *rhugchos* (pronounced *rhunchos*) meaning " a bill," alluding to the straight, sharp, pointed bill, and should read *Plectrorhyncha*.

No. 593 reads *Gliciphila*. This should be *Glycyphila*, as it is derived from two Greek words *glukus* " sweet," and *philein*, "to love," compare with the name of a botanical species *Glycyphylla*, meaning "sweet leaf or foliage," also derived from the Greek *glukus* and *phullon*.

My reason for bringing this matter of nomenclature under notice is for the sake of accuracy, which in these enlightened days is necessary for scientific work, and also for classical reasons when dealing with the Latin and Greek derivations. Priority of names is said to be of first importance in nomenclature, but this is unprogressive and unscientific, for as our knowledge increases we should be in a position to check a false impression which may have been made in ignorance in the first instance, and alter a name to one more in conformity with our later knowledge. To my mind it is absolutely inexcusable when, because a name is spelt wrongly originally and at variance with its derivation from the Greek or Latin, it is allowed to stand simply because of priority. Accuracy should come first.

In scientific nomenclature it is the rule for the generic name to be derived from the Greek and the specific one from the Latin, but this rule is frequently broken, as, *e.g.*, in the case of the genus *Hirundo*, which is Latin. Scholarship experiences a rude shock in the case of a generic name which is composed of both Greek and Latin roots combined, as in the name *Hirundapus*.

It seems to me that more attention should be paid to these matters in scientific nomenclature, in order to obviate any offence classically or grammatically.

Yours etc.,
E. C. Chisholm, M.B., Ch. M.

Comboyne, N.S.W.
September 6, 1926.

The Official Checklist.

MEMBERS will be glad to know that the long-expected Official Checklist of the Birds of Australia, second and revised edition, is now available. An extended notice will appear in the next part of *The Emu.*

It is regretted that on account of a great increase of costs, it was not possible to issue to each member the checklist as a Supplement of *The Emu.*

The Federal Treasurer, Dr. Earle Page, has been asked to assist the R.A.O.U. by paying the printing bill of the Government Printer of Victoria. This bill proved to be £400. It is expected that at the most about 600 copies will be effectively used, so that the cost of printing amounted to 13s. 4d. per effective copy.

Send 12s. 8d. (postage 2d.) and a copy will be forwarded by Mr. D. Dickison, Hon. General Sec. R.A.O.U., 376 Flinders St., Melbourne.

A limited number of copies, interleaved, and with light-green, flexible covers, will be available at 18/6 per copy.

The Appendix by Mr. H. Wolstenholme, B.A., M.B.O.U., giving origin, deriviation, meaning and pronunciation of the scientific names, will interest all members.

CHECKLIST APPENDIX.

Mr. H. Wolstenholme sends the following note :—

The names *Carterornis, halmaturina* and *morgani* were unfortunately omitted from the Checklist Appendix.

Carterornis (see *carteri*) Part D of Appendix.

Halmaturinus (*Zosterops halmaturina*) is the adjective formed from *Halmaturus*, a generic name of one of the kangaroo tribe, and therefore used to signify "belonging to Kangaroo Island, South Australia." *Halmaturus* is compounded from the Greek words *halma* (*halmatos*), a leap, and *oura*, tail.

Morgani (*Acanthiza morgani*) is in honour of Dr. A. M. Morgan, Honorary Ornithologist of the Museum, Adelaide, South Australia.

In Part E of Appendix the following words should appear as shown here :—

Ac-anth-orn'-is, Das-y-orn'-is, E-rēm-i-orn'-is, ae-qui-noct-i-ā'-lis, Æg-o-thē'l-ēs, Ap-tēn-o-dȳ'-tēs, Scē'n-o-poe-ē'-tēs, cor-ōn-ōid'-ēs, cal-lā'-i-nus, Cyr'-to-stom'-us, flā-bell-i-form'-is, Gel-o-chel-ī'-don, gī-gan-tē'-us, hu-mer-ā'-lis, Loph'-o-lāī'm-us, Meg-a-pod'-i-us, sa'-cra, Sē-mi-pal-mā'-ta, sē-mi-tor-quā'-tus. And on page 138 *Melior'nis* and *Pel'-a-go-dro'm-a.*

R.A.O.U. Congress, 1926.

Members of the R.A.O.U. are invited to attend the 25th Annual Congress of the Union, to be held in Sydney, commencing on October 18, and a Camp-out, to be held in the vicinity of the famous Barrington Tops, commencing on October 23.

Detailed arrangements for the Congress are in the hands of the N.S.W. Section of the R.A.O.U. A considerable volume of interesting matter will be listed for discussion, and there will be also an attractive programme of lecturettes and outings. One of the trips will be to National Park, where Sydney ornithologists have a cabin which acts as a central point for the study of the splendid birds of the area.

The Camp-out promises to be fruitful and entertaining. Members will go by train to Dungog, about 140 miles north of Sydney (not far from Newcastle), and from there motor-cars will carry the party to the upper Williams River and the foot of the Barrington Tops. The locality is reported by Messrs. A. H. Chisholm and N. W. Cayley, who went recently to select a site for the camp, to be very picturesque and most promising for naturalists.

The remarkable Rufous Scrub-Bird (*Atrichornis rufescens*) finds its southern limit there ; and other birds of outstanding interest found in the area are the Superb Lyre-Bird, the Rifle-Bird, the Regent-Bird, the Spine-tailed Logrunner, the Olive Whistler, etc. Jungle and forest country intermingle, and in both classes orchids are abundant.

The good people of Dungog are keenly interested in the expedition, and have promised to help by providing transit and in other ways. Residents of the Williams River are also closely interesting themselves in the project. Tents, a cook, and a certain number of blankets will be provided, but trippers should bring rugs, especially if they propose to visit the top of the mountains.

Members who intend to be present should at once notify Mr. N. W. Cayley, State Secretary, R.A.O.U., " Myriam," Collins Avenue, Rose Bay, Sydney.

Expedition to Lord Howe Island.

An expedition of ornithologists and other naturalists to Lord Howe Island, 420 miles from Sydney, is being organized by Mr. E. F. Pollock, R.A.O.U., J.P., late Hon. Sec. of the Royal Zoological Society of New South Wales. The party will embark for the island on 13th November, 1926, and return to Sydney after an absence of about five weeks.

Few more attractive or interesting spots for a camp could be selected from an ornithological point of view, as sea-birds breed in myriads on the Admiralty group of islets, about a mile from Lord Howe Island, and November has been selected as the best month for observing the young birds. Prominent among the sea-birds which breed on Lord Howe and the adjacent islands may be mentioned the Masked Gannet, the Red-tailed Tropic-Bird, the Sooty Tern, the Wedge-tailed Petrel, and the Short-tailed Petrel.

Apart from its special attraction to ornithologists Lord Howe Islands is justly celebrated for its charming climate, beautiful scenery, and its wonderful palm groves. Bowls, cricket, splendid fishing, mountaineering and surfing are other attractions.

Mr. Pollock, who last year organized and led an expedition to the Capricorn Islands, off the coast of Queensland (an account of the birds then observed was published in the April issue of *The Emu*, by Dr. W. Macgillivray), extends a cordial invitation to R.A.O.U. members to join his party.

As the size of the party will necessarily be limited to the capacity of the steamer, the camp will be for gentlemen only, and for the same reason those desiring to make the trip should communicate immediately with Mr. Pollock at " Te Whare," Carrington Avenue, Strathfield, N.S.W.

It is expected that the camp will be a large one and R.A.O.U. members from New South Wales, Queensland and Tasmania have already booked as passengers.

Notes and Comments.

Mr. H. L. White, C.F.A.O.U., of " Belltrees," Scone, N.S.W., who is well-known for his practical assistance to Australian ornithology, has been seriously ill for a considerable period. Members will be glad to know that he has now recovered.

Mr. A. S. Wilkinson, of Kapiti Island, New Zealand, a member of the Council of the R.A.O.U., recently underwent a serious operation in the Masterton Hospital. He has made a good recovery.

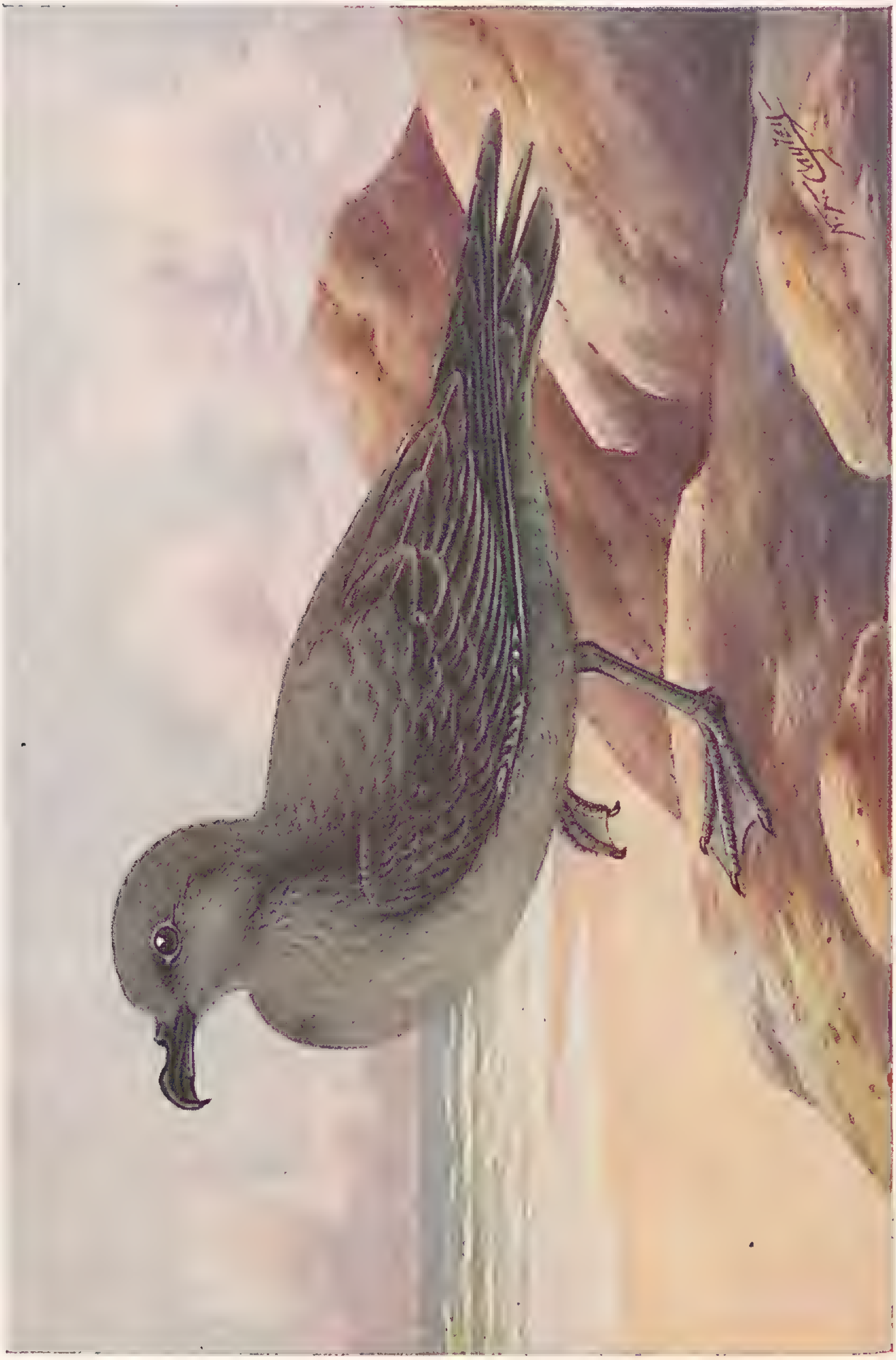
Dr. W. Macgillivray, C.F.A.O.U., of Broken Hill, visited Sydney during August-September to be operated upon for appendicitis. The operation was completely successful and he has now returned to his home.

Will authors tendering papers or notes to *The Emu* please observe the nomenclature given in the Official *Checklist* (Second Edition), which has just been issued. All papers should be typed, or else very clearly written.

A Correction.—Plate 51 in Vol. XXV of *The Emu* is inscribed " Photo from Watling Drawing No. 61, Type of *Gracula melanocephala*, Latham." The picture, as stated in the accompanying remarks by Mr. G. M. Mathews, is the type of that species, but it is not one of the " Watling Drawings." It is No. 61 of another series of drawings preserved in the British Museum. Watling Drawing No. 61 represents the Magpie-Lark and is the type of *Corvus cyanoleucus*, Latham. I desire to make it clear that the mistake in the inscription was entirely mine, and to pologise to Mr. Mathews for the error.—W. B. ALEXANDER.

NATIONAL MUSEUM MELBOURNE

PLATE 24.



KERGUELEN PETREL
Pterodroma brevirostris

The Emu

OFFICIAL ORGAN OF THE
ROYAL AUSTRALASIAN ORNITHOLOGISTS' UNION

"Birds of a Feather."

Vol. XXVI.] JANUARY, 1927. [Part 3.

The Kerguelen Petrel, *Pterodroma brevirostris.*

By A. J. Campbell, C.M.B.O.U., &c., Melbourne.

Dr. Godman in his *Monograph of The Petrels* figures this species (pl. 60), remarking: "This Fulmar (Petrel) is recognised by its entirely slaty-grey (dark drab-grey, with slate-grey tinge) plumage and compressed bill. The axillaries and under wing-coverts are also slaty-grey, with whitish edges to feathers, the lower primary-coverts and inner webs of the quills being paler grey, but without white."

Both Rev. A. E. Eaton and Dr. Kidder, respectively of the British and American Transit of Venus Expeditions to Kerguelen in 1874, found the species breeding (October to December); and our member, Robert Hall, who visited the island in 1897, states*:—" On January 25th (1898), in Greenland Harbour, I dug out a hollow that branched in two directions at 5 feet from the entrance. One tunnel went for another 6 feet and contained at the end a Spectacled Petrel (*Majaqueus aequinoctialis*) upon a nest without an egg. The other branch had a dome-shaped cavity some 18 inches from the confluence in which sat a Short-tailed Petrel (*Œstrelata brevirostris*) without an egg. The nest indicated that the bird was a fully fledged young one."

The Kerguelen Petrel is new for Australia† and the specimen figured by N. W. Cayley is from the " H. L. White collection," National Museum, Melbourne; was picked up on the Western Australian Coast after a storm by F. L. Whitlock, who also saw remains of one, or more, of the same species. Whitlock's account of finding these specimens appears elsewhere in this issue.

The following are particulars of the specimen figured in the flesh: Locality, Cottesloe Beach, Western Australia; date, 3/6/26; plumage, immature; length, 315 mm.; wing, 250 mm.; culmen, 35 mm.; tarsus, 40 mm.; bill, black; eyes, brown (?); feet, dark-brown (?). Note: Specimen not fresh when found.

**Ibis*, 1900, p. 24.

†*Vide Emu, ante,* p. 136.

Ocean Derelicts.

BY F. LAWSON WHITLOCK, R.A.O.U., Perth, Western Australia.

THE winter months of 1926 will always be remembered in the West as a period of flood and storm. The part of our coast-line most affected was that section extending from Shark Bay to the Leeuwin, and the whole of the Southern coast. These gales were naturally accompanied by heavy seas, which cast upon the beaches piles of sea-weed mixed with dead marine life and the bodies of ocean-loving birds.

My interest in the birds was aroused by Mr. D. L. Serventy, R.A.O.U., recovering a pair of the rare Wilson's Petrel, which he was kind enough to bring to my house for inspection.

I resolved to try my own luck, and on 3rd June went down to Leighton, near Fremantle. A heavy three-days' gale was just dying down, but when I arrived on the beach I found the ocean still very rough, with occasional heavy squalls of wind and rain. Piles of sea-weed, mingled with broken shells, cuttlefish bones, and starfish were scattered about right up to the foot of the sand hills. I walked northwards, and it was not long before I found the body of a Prion. Before I left the beach, which I examined for a distance of over three miles, I found the bodies of quite twenty birds in a more or less battered and sodden condition. A fine Giant Petrel had been flung by the surf almost on to the parade at Cottesloe Beach.

Any of these unfortunate derelicts that appeared to have their plumage intact I picked up and carried home. Some were half-buried in the wet sand; one or two I rescued from the water. Exceptionally, I found individuals that had reached the sand-hills alive, and afterwards perished of cold and exposure; all were in a very emaciated condition.

During long periods of rough weather oceanic birds are unable to obtain a sufficiency of food, and, becoming weakened in consequence, are no longer able to contend with the heavy winds. Before they can reach a haven of refuge, they are beaten down and overwhelmed by the heavy seas, to be cast ashore on the nearest beaches.

In dealing with these luckless birds I found the best method was to shake out as much sand as possible when I picked them up, and to open out the plumage as far as possible to allow the wind to blow through it. As drying progresses further manipulation of the feathers is necessary. This prevents the plumages from drying in clinging patches, until each feather is separated from its neighbour. A bird like a Prion will dry in a couple of hours if this method is adopted. It entails some trouble, but a saturated bird should never be put away in a collecting bag.

Amongst those I picked up 3rd June was a dark-colored individual of medium size. At first glance it looked like a Shearwater (*Puffinus*). It was half buried in the sand, and when dis-interred looked pretty hopeless. But there was something unfamiliar about the beak, which was too short and deep for that of a Shearwater. So I brought it along, and treated it as before described. As it dried my interest increased, and I gave it extra attention. On reaching home I skinned it at once. It was obviously an immature bird, but I could not place it. After referring to Mathews' *Birds of Australia*, I felt convinced I had met with a stranger. As soon as possible I sent it off to Mr. A. J. Campbell (Melbourne), who after careful research identified it as a specimen of the Kerguelen Petrel (*Pterodroma brevirostris*), an addition to the Australian list.

On 14th Aug. I was again on the beach and found the wreck of a similar bird. This time I could do no more than take measurements, and afterwards cut off the head, wings, tail and feet. I sent these parts to Mr. Campbell and he wrote that he was quite satisfied that they represented a second specimen of the same bird. The dimensions (in millimetres) were as follows :—Length 335 ; wing 240 ; beak along gape 30 ; tail 110 ; tarsus 30. The feet had dried up, but a tinge of flesh-color was discernible.

One cannot be on the beach too soon after the expiration of a gale. There are too many small crustaceans awaiting their prey, and the body of a bird is soon attacked. I found many Prions so damaged about the head as to be useless. The feet, too, are often spoiled through the webs being eaten.

Between the months of May and November I visited the beach, in all, ten times. By far the greater number of derelicts I found were Prions (*Pachyptila*), and amongst them one form predominates.

Mathews, in his *Birds of Australia* (Vol. II), appears to agree that there are four species of Prions recognised—"alike in plumage and markings, with very little difference in their dimensions except in the bill, and in the development of lamellæ at the base of the upper mandible." He recognises a number of sub-species to each of the four. One of these, having a beak at the base averaging 15 millimetres, he calls *Prion desolatus alexandri*. It is the commonest form found on our local beaches. I found both old birds that had bred more than once, and birds of the year—showing their immaturity by the possession of brown margins to the inner flight-feathers—during the earlier part of the winter, and many non-breeding birds towards the close. The beaks of the latter averaged only 13 mm.

Another form, which was much rarer, had visible lamellae, and a beak at the base about 19 millimetres in width. None of this form came ashore late in the winter. (In passing, I must note that Prions dying ashore retain a velvety softness of plumage which is lost by long immersion in salt water.)

In addition, there were two narrow-billed birds which measured only 9 and 10 mm. at the base. All these Prions had feet of a brighter blue than the blue of the beak. Webs were cream.

Mr. A. J. Campbell, who has carefully examined and compared all the specimens I prepared, refers all but three small-billed birds to *Pachyptila banksi*. The three latter he calls *P. desolata*.

Beach-combing for derelict birds is a new experience to me, and I found the identity of the Prions very puzzling. Still more puzzling is the diversity of opinion regarding them by those competent to judge. It is good to learn that Messrs. A. J. and A. G. Campbell are thoroughly going into the matter and I hope they will at least clear up the relationship of the various Australian forms.*

Puffinus assimilis.—A few of these came ashore. I got one in perfect condition. It had sought refuge in a cavernous hollow and died there. The upper parts were dead black with very little gloss, but powdered with bluish grey. Beak bluish grey; feet blue; webs partly blue, partly cream. Mr. Mathews has been at an immense amount of trouble in clearing up the references to this bird. My specimens appear to be *P. assimilis tunneyi*, which breeds in the Archipelago of the Recherche, and also on the Abrolhos Islands. With the aid of a field-glass I several times recognised a few on the wing, doing their best to battle with the gale.

Puffinus carneipes.—A number of these Shearwaters came ashore during October, both locally and at Bunbury, 120 miles to the south, and no doubt along the intervening coast-line. The mortality amongst Petrels of all species must be very great during such a winter as we have lately experienced. I was only able to examine the local beaches for a distance of six miles, but found derelicts at intervals as far as I walked.

Puffinus pacificus.—A single specimen of this common species came ashore in October.

Pelagodroma marina.—A single male specimen was picked up on 23rd Oct. This is the solitary "Mother Carey's Chicken" I met with, despite the fact that the White-faced Storm-Petrel is reported to breed on islands off the coast. Mr. O. Liffert tells me he found this species nesting on the Abrolhos islands some years ago. It probably does so still.

Macronectes giganteus.—In contrast with the solitary occurence of the last species, as many as ten of these powerful birds were driven ashore and died there. One was blown inland at Mount Barker, 32 miles by rail from Albany. It was fed, and recovered its strength. All I examined were of a uniform dark brown color. An average specimen measured :—Length 870 m.m.; wing 500; culmen 106; width of beak 33; depth of beak 35 : tarsus 80; middle toe 132; tail 226; wing expanse 6¼ feet.

Thalassogeron melanophris.—A single example was washed up dead on the beach on Oct. 19. It measured seven feet eight inches in wing expanse. The beak was greyish pink, with black lines from forehead to nostrils; tarsus, feet and webs, flesh coloured; but all the joints were tinted bright blue.

Thalassogeron chlororhynchus.—About half a dozen of this smaller species of Albatross came ashore. All but one had black beaks. The

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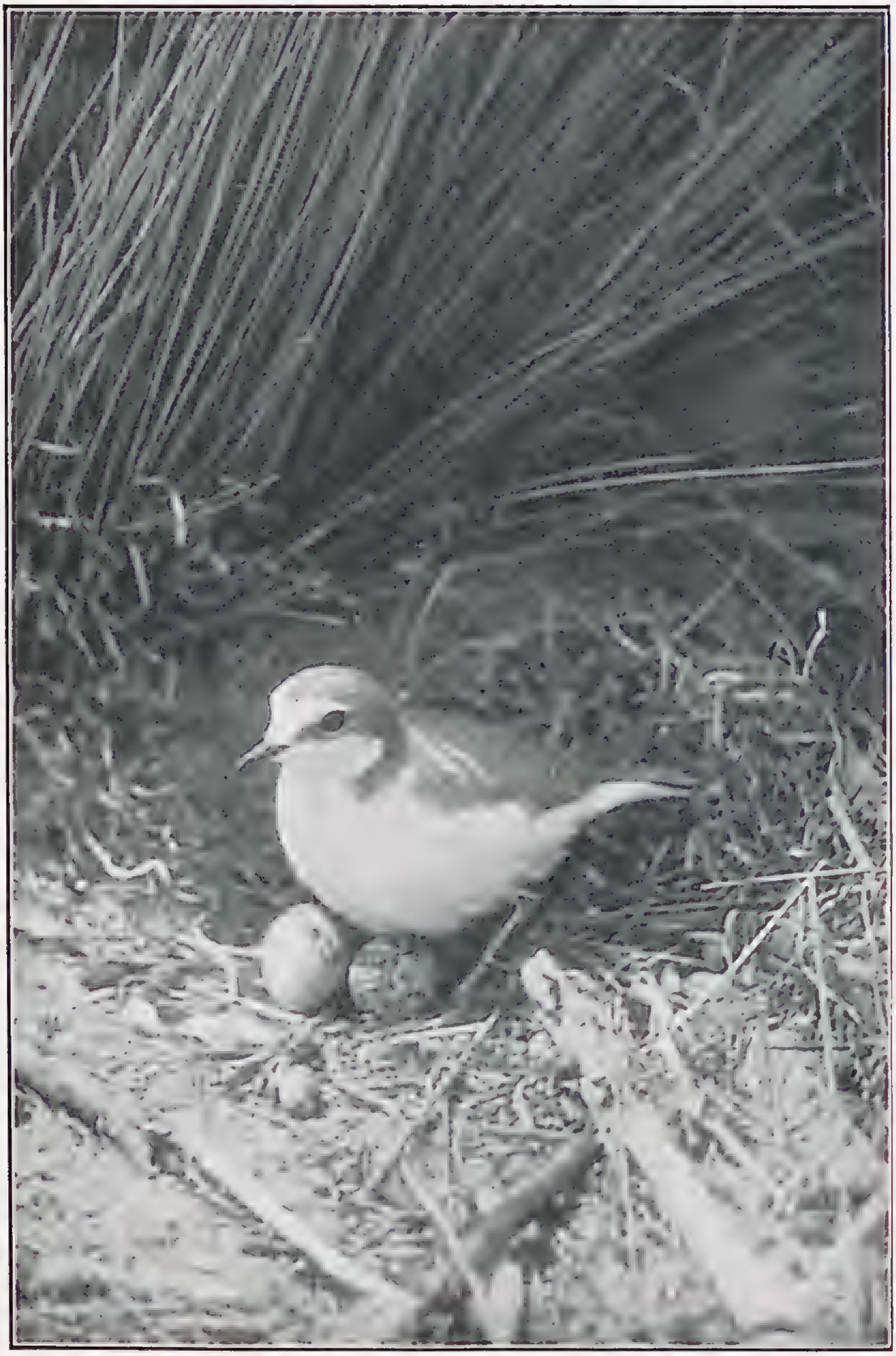
* See p. 201—Editor.



RED-CAPPED DOTTEREL COVERING EGGS.

Photo. by M. S. R. Sharland.

exception had the yellow line and indian-red tip to the culmen, peculiar to the fully adult.

Amongst sea-birds not of the Petrel family the following came ashore or were noted in a semi-exhausted condition :—*Sterna bergii* (Crested Tern), *Sterna anaetheta* (Bridled Tern), *Sterna dougalli* (Roseate Tern), (Bunbury Beach) *Anous tenuirostris* (Lesser Noddy), *Lestris richardsoni* (Richardson's Skua). The last-mentioned bird was seen at very close quarters on Oct. 23. I nearly caught it, but it had just sufficient strength left to elude me. It belonged to the light phases of plumage, peculiar to this Skua.

The foregoing is an account of my own recent experiences on our local beaches, supplemented by information, and a few specimens supplied by my daughter, who is now living at Bunbury. Local references to Petrels will be found in *The Emu* of Jany., 1921 (W. B. Alexander); Oct., 1923 (T. Iredale); and July & Oct., 1920 (W. B. Alexander).

I was again doing research work on behalf of Mr. H. L. White, of "Belltrees," Scone, N.S.W., and all the specimens referred to have been added to the collection in the National Museum at Melbourne. Mr. White, too, has generously authorised the colored plate of the Kerguelen Petrel.

The Red-capped Dotterel.—The Dotterels, an interesting family of birds, are represented in Tasmania by two resident varieties, the Red-capped (*Charadrius ruficapillus*) and the Hooded Dotterel (*C. cucullatus*), and by a migrant, the Double-banded Dotterel (*C. bicinctus*). Sometimes, but very rarely, the Black-fronted Dotterel (*C. melanops*) puts in an appearance. I have not seen it myself, but I know persons who have, some of whom would give a lot for a clutch of eggs. While the Hooded Dotterel is more a bird of the open beaches and the coast, the little Red-cap, the "twinkler of the sands," frequents as a rule the muddy edges of estuaries and shallow bays some distance from the actual coast-line, laying its eggs among bleached shells or under cover of tussocks, sometimes a few feet and at other times 100 yards or more from high-water mark. A nest at which a series of photographs of the bird was secured last spring was well-hidden beneath a thick clump of grass about 50 yards away from water, the owner being flushed from this when I was on my way to try to locate a nest of a pair of Oyster-catchers on a sand spit running into the bay. The two eggs evidently were well-incubated, because the bird did not go far, and after I had rigged up the camera under a pile of sea-weed and hidden myself beneath a brown coat among some reeds, she returned and covered the eggs before fifteen minutes had elapsed. Later, the young ones formed subjects for photography, and a nice series of pictures resulted.—M. S. R. SHARLAND, Hobart.

Some Unsolved Problems of Australian Avifauna.

By Edwin Ashby, C.F.A.O.U., South Australia.

(Presidential Address, R.A.O.U. Congress, 1926.)

We are all inclined, perhaps unconsciously, to feel that the work done by that king of ornithologists, John Gould, and supplemented since his day by a long list of able workers, leaves but little for future workers to discover. I would point out that the describing of new species, or subspecies, is but a small part of the study of ornithology, and I desire to call attention to another side of the picture.

We in Australia are apt to forget the size of this great country, and to overlook the fact that most of our workers of necessity do little more than touch the coastal fringe and make their investigations chiefly in the neighbourhood of the capital cities. Australia is a continent, its area being a little greater (leaving out Alaska) than the United States of America. Its avifauna is one of the richest in species and in diversity of character.

Our knowledge is in many directions very scrappy; the range of habitat of many species is unknown; the extent and courses of their partial or seasonal migrations are but little known; and the causes that bring about the irruption of certain forms into districts where they had been previously unknown for many years are still obscure. The reason for the sudden disappearance of certain forms from old localities, the nature of their food, their seasonal changes of diet, the gathering together of statistical data showing the economic value of certain species and the study of those measures that are needed to make their influence for good more effective—all those things form an almost undiscovered province for research. I will endeavour to illustrate my meaning with the aid of examples.

One of the handsomest of our waders, the Banded Stilt (*Cladorhynchus leucocephalus*), was described 110 years ago, is endemic to Australia, is familiar to sportsmen in all the States except Queensland, and is often seen in very large numbers. Yet its nest and an authentic clutch of its eggs are both unknown.

The order *Psittaciformes* furnishes us with a number of examples of the disappearance of certain species over many years. Some of these instances I have already called attention to, but I trust I shall not be tedious if I again refer briefly to some of them, as little if any data has since been forthcoming.

The beautiful Paradise Parrot (*Psephotus pulcherrimus*), disappeared from its old haunts in Queensland, and for long was reckoned as extinct. Nearly 20 years later Chisholm recorded its rediscovery by Jerrard, in small numbers in one locality, and I venture to think that it is still in considerable numbers in the wide spaces of the interior.

The little Turquoise Parrot (*Neophema pulchella*), has for many years deserted one of its old haunts between Melbourne and Gippsland,

and was referred to in published statements as probably extinct. Within the last few years it has been identified several times in widely-separated localities.

The Scarlet-chested Parrot (*Neophema splendida*), is another of the supposed extinct species, but it is still, and probably always has been, scattered over a particular area in South Australia.

Of the movements of the Orange-breasted Parrot (*Neophema chrysogaster*), we know practically nothing. In November, 1885, in one of the localities where Gould had met with it in numbers, close to Port Adelaide, I found it very numerous, but for 33 years it was unknown in South Australia. Then in October, 1918, Dr. A. M. Morgan met with it in hundreds, probably thousands, in the south-east of the State, and this year it has again been taken there. Twice, comparatively recently, skins have been sent to me from different parts of Tasmania that were thought to be referable to this species, but all of them were the Blue-winged Parrot (*N. chrysostoma*). It is doubtful if any of the recent Tasmanian records are rightly assigned to *N. chrysogaster*. Where have these thousands of birds been, so that our knowledge of them was a blank for a full generation? What particular seeds formed their food supply, the absence of which caused their neglect of their old feeding-grounds? Or are there other causes that account for their disappearance?

The Regent Parrot (*Polytelis anthopeplus*), was stated to be so reduced in numbers in Victoria as to be approaching extinction. At the same time it was being shot by orchardists in Western Australia (1500 miles away), because of the damage it was doing to their fruit.

The Blue-breasted Wren (*Malurus pulcherrimus*), named by Gould from skins obtained in the Wongan Hills, Western Australia, was lost for about 60 years. It was re-discovered by Conigrave in the original locality, and later was found by Whitlock further south in the Stirling Range. Some two years ago it was my privilege to identify a skin of this species collected by Mellor in Eyre Peninsula, South Australia, about 1200 miles from its nearest previously-known habitat.

I must make special reference to a remarkable piece of work carried out by Mr. F. L. Whitlock, and which was made possible through the munificence of our esteemed member, Mr. H. L. White; I allude to the six months' research work done by Whitlock in the neighbourhood of the James Range, Central Australia, the results of which were published in *The Emu*, Vol. 23, pt. 4, 1924. The journey was ostensibly taken for the purpose of rediscovering the elusive Night-Parrot (*Geopsittacus occidentalis*), and although no skins were actually taken, authentic data of its occurrence there was obtained. In fact, an example was cooked and eaten by the blacks during his stay. As is so often the case, the greatest finds were the unexpected, showing the fallacy of the course sometimes adopted of only granting permits for specific species. From the discoveries then made I take the following to illustrate my point, that we are still absolutely in the dark as to the extent and limitations of the range of habitat of many of our birds.

The Spinifex-Bird (*Eremiornis carteri*), known previously only in the extreme north-west of Western Australia, its then known range extending from North West Cape to the Kimberley District, was discovered in the centre of Australia, 1250 miles east and about 750 miles south of its previously-known habitats.

The Rufous-crowned Emu-Wren (*Stipiturus ruficeps*), which, except for a single skin in the Angove collection, labelled "Central Australia," was hitherto only known in the region of North West Cape, 1250 miles west of Whitlock's new discovery. The little Grey Honeyeater (*Lacustroica whitei*), previously known only 1100 miles further west, in the Murchison District, was found in the James Range.

The Robust Thornbill (*Acanthiza robustirostris*), discovered at Day Dawn, 900 miles to the west, and later found by S. A. White in the Everard Range, 200 miles to the south, was another of the discoveries in this central range.

I cannot refrain from quoting from the concluding note of Whitlock's account, A. J. Campbell being, I believe, responsible for this addendum. After a reference to the various expeditions that have traversed the same interior country, it is said: "Nevertheless, the vast interior is still in an ornithological sense practically 'To Let.' All work at present accomplished points to a region of more than passing interest, because it has been shown to contain many zoological remainders of the most ancient part of the continent. Detailed research of these remainders has yet to be worked out."

I certainly endorse these remarks and desire to widen their application. From the foregoing data it will be apparent that many so-called rare or extinct species do not necessarily come under these designations, for in some of the cases cited the encroachment of agriculture and the enlargement of cities have driven many species back into the vast, unpeopled interior of the continent. A species which still numbers thousands forsakes some of its old feeding-grounds in the neighbourhood of one of the capital cities, and not the slightest trace of it is found for a generation. Several of the species cited have recently been discovered from a thousand to twelve hundred miles away from their previously-known habitats. Are we to imagine that these forms do not occur in any of the intermediate places between these distant points? I think not. All we can answer is, "We do not know!"

I suggest that the real reason is that in these vast stretches of country not a single competent ornithologist exists. We find that the beautiful Scarlet-chested Parrot, while supposed to be extinct, exists in the region of Lake Frome; and we ask, "Why should it select that locality in preference to hundreds of similar areas?" The only sensible answer is that it does exist on these or many of them, but over millions of acres of suitable country there does not exist an observer sufficiently competent to identify the species.

Are there no links in the thousand-mile distances, or are some of the forms referred to confined to what may be termed islets in a great ocean of unoccupied territory? What do we know about the extent of habitat of geographic races—whether gradual transitions exist or whether allied forms are truly distinct and separated by definite lines of demarcation? Are some so-called subspecies or even species mere variants, the chain of intermediates being still living and unbroken?

We dimly recognise that the encroachments of the grazier and the farmer have altered the nature of the country and have destroyed the food supply of certain species. The destruction of forests does away with forest-loving birds; the destruction of hollow trees and hollow limbs means the elimination of Tree-creepers and Parrots; the destruction of bushes and native scrub soon exterminates from a locality those forms of insectivorous birds that use such as their nesting-sites, and these birds are replaced by those which love open grass country, such as Larks and Pipits.

What do we know about the particular foods and seasonal changes of diet of most of our birds? I recently saw the contents of an Emu's stomach that had just arrived from Mootooroo, on the Cockburn line (South Australia), and its contents were being tabulated by the Government Entomologist, Mr. Arthur M. Lea. I saw dish after dish of caterpillars, each nearly 2 inches in length. No less than 2,991 of these larva were counted from that single stomach.

On the same day appeared in our daily papers the second annual report of the Prickly Pear Land Commission of Queensland, in which it was stated that bonuses were placed on the heads and eggs of Emus. Admitting the the Emu is a voracious eater of prickly pear fruit, is the Commission aware that it is also a voracious eater of destructive larva? I suggest that in face of our ignorance of the seasonal changes of diet of the Emu, as well as of other species of birds, neither we nor the Queensland Commission are competent to form a balanced judgement on the points involved by such wholesale destruction of our native fauna. While it may be thought that this wholesale destruction of birds will in some measure stay the encroachment of the pear pest, is it not possible that by the withdrawal of the useful services of these birds, some insectivorous scourge of equally menacing proportions may be released, and serious damage done over even larger areas? All I claim is that the necessary data in the directions named does not yet exist, and that of necessity such action as is now being taken by the Queensland Commission is largely stepping in the dark.

I submit that Australian ornithology, especially from the ecological side, is still in its beginnings. Much rarer than many of our supposedly extinct birds are trained, working field ornithologists. Where there is one worker to-day Australia needs hundreds. Our knowledge of probably nine-tenths of Australia, as regards its avifauna, has been gained through what may be called spasmodic expeditions, traversing great distances with very limited available time. The results, both in the interior and up the great coastal belt of Queensland, have been most fruitful; but all this work cannot be considered more than the foundation upon which fuller and more accurate information is to be built.

In conclusion, I pass by the destruction of fauna and flora due to the encroachment of man in the settled areas, and call attention to the unlimited destruction caused by fires. Unless some method is found to curtail this menace, certain species of fauna will assuredly disappear from vast tracts of country.

Minutes of the Twenty-fifth Annual Congress of the R.A.O.U.

THE CONGRESS was held at Sydney during the week commencing 18 October, 1926. Delegates present were :—Mr. Edwin Ashby (President), in the chair ; Capt. S. A. White and Mr. A. M. Lea (South Australia) ; Messrs. A. J. Campbell, C. L. Barrett, F. E. Wilson, Mrs. J. W. Israel (Victoria) ; Dr. Bruce Anderson, Dr. G. Murray Anderson, Miss E. McDonald (Tasmania) ; Dr. C. Anderson, Dr. E. A. D'Ombrain, Messrs. J. R. Kinghorn, A. H. Chisholm, E. J. Bryce, H. Wolstenholme, C. Coles, A. Musgrave, J. B. Thomas, E. Le G. Troughton, T. G. Campbell, H. Burrell, N. W. Cayley, J. N. King, N. Chaffer and W. Rhodes (New South Wales) ; Visitors : F. G. C. Tooke (South Africa); Mrs. and Master Campbell (Victoria) ; Mrs. and Miss Anderson (Tasmania).

CIVIC RECEPTION.

Shortly after noon on October 18 delegates and their friends were accorded a reception at Sydney Town Hall, Alderman McGuiness (Deputy Lord Mayor) officiating on behalf of the Lord Mayor (Alderman Stokes). Addresses of welcome were made by the Chairman and others, and responses were given by the President of the R.A.O.U. (Mr. Ashby), and several other visitors. A vote of thanks was accorded the Deputy Lord Mayor on the initiative of Sir Charles Rosenthal, President of the Australian Museum.

The gathering was a comprehensive one, including representatives of all the scientific and natural history societies of N.S.W., the Commissioner of Police (Mr. James Mitchell), and other leading citizens.

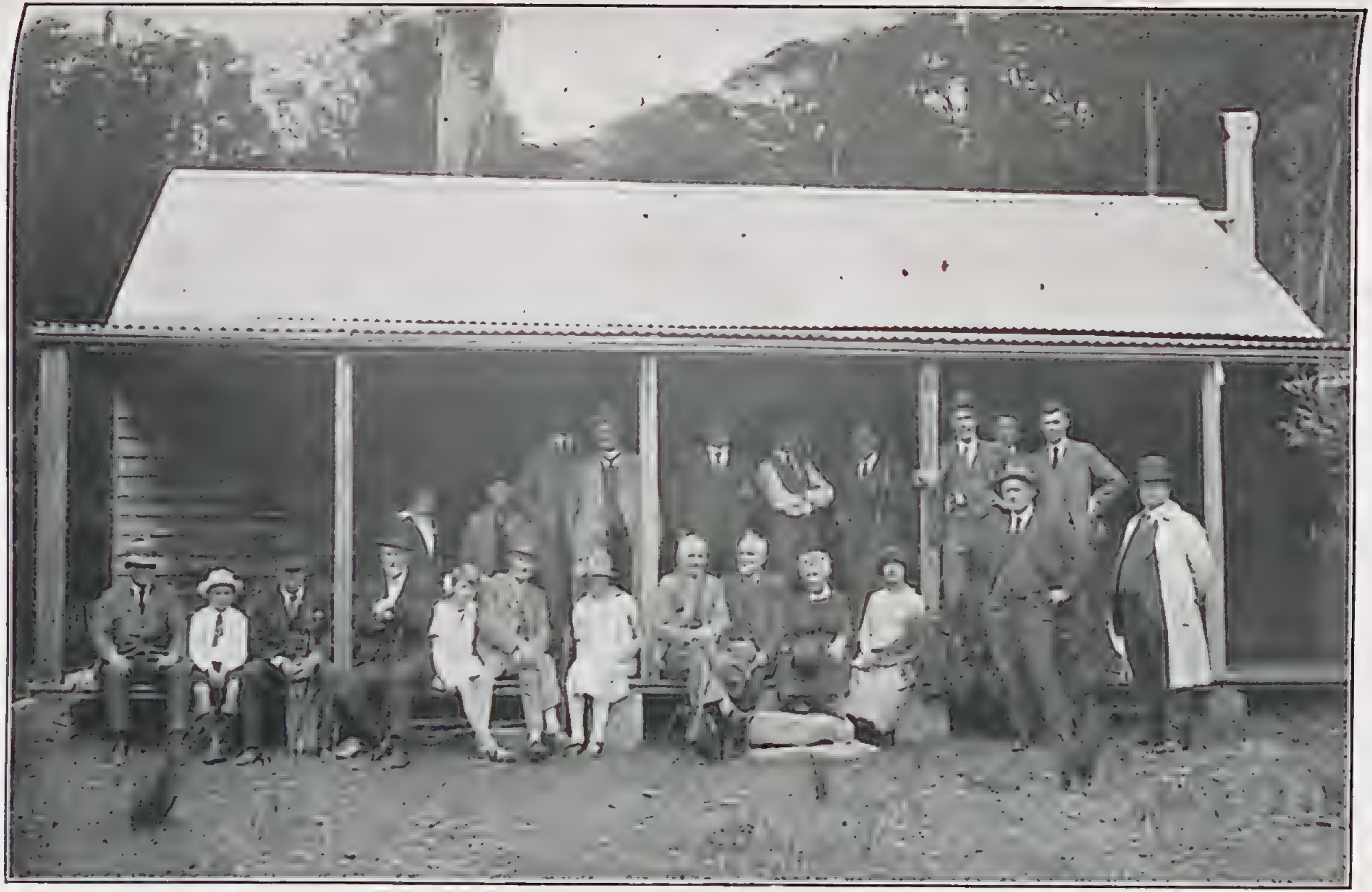
CONGRESS OPENED.

Congress was opened at 2.30 p.m. in the lecture theatre of the Australian Museum by the President, and the delegates were welcomed by the Director of the Museum (Dr. Charles Anderson, M.A.) on behalf of the Trustees.

Mr. J. R. Kinghorn was elected to act as minute secretary to Congress.

Apologies for absence and good wishes were received from the following members :—Dr. J. A. Leach, Dr. W. Macgillivray, Dr. Spencer Roberts, Dr. A. Chenery, Miss. J. A. Fletcher, Messrs. Clive Lord, F. L. Berney, Robert Hall, H. G. Barnard, R. H. D. Stidolph, W. R. B. Oliver, G. A. Heumann and G. H. Barker.

The minutes of the last Annual Congress were taken as read and confirmed.



R.A.O.U. PARTY AT BIRD-CABIN, NATIONAL PARK, N.S.W.

Back Row: Mrs. A. J. Campbell, Miss Macdonald, A. J. Hehir (N.P. Trust) Frank Farnell (Chairman N.P. Trust), S. Toombs (N.P. Trust), J. R. Kinghorn, N. W. Cayley, H. Wolstenholme, Dr. G. M. Anderson, A. H. Chisholm.

Front Row: C. L. Barrett, D. Campbell, A. M. Lea, A. J. Campbell, Miss Anderson, Dr. B. Anderson, Mrs. Anderson, C. Coles, E. Ashby, Mrs. Israel, Mrs. Messmer, Dr. C. Anderson, W. F. L. Bailey (N.P. Trust).

Photo. by A. Musgrave.

NATURAL [illegible]

CHECKLIST AND FINANCE.

The report of the Hon. General Secretary and the Report and Balance Sheet submitted by the Hon. Treasurer were discussed in company and adopted. In the discussion Mr. Campbell pointed out that £250 had been ear-marked for the printing of the Second Edition of the Checklist, but £400 was needed. He suggested that a further appeal for assistance be made to the Commonwealth Treasurer, who might be willing to provide at least half the amount of the printer's bill for this national work.

The President, Captain White, and Mr. Chisholm discussed various aspects of this matter, and it was agreed to leave in the hands of Mr. Chisholm and Dr. J. A. Leach the question of further representations to the Commonwealth Government.

INFORMAL VOTING.

Mr. Cayley called the attention of the President to the fact that the Council had again invited members to vote on notices of motion. This has been objected to at the Queensland Congress in 1924, and Sir Matthew Nathan (then Chairman) had ruled that such plebiscites were informal.

The President agreed that votes taken in this manner were informal and could not be accepted. He pointed out that it was impossible for members to vote with proper judgment without hearing both sides of the question, and this could only be done when a notice of motion became an actual motion. He ruled the plebiscites out of order, but suggested that the votes be counted and recorded, merely to indicate the views of absent members.

Several members spoke on this matter, all agreeing with the President's ruling and regretting that such plebiscites had again been taken.

It was agreed to count the votes, and Messrs Musgrave and Wilson were appointed scrutineers for this work and also to ascertain the voting for office-bearers.

LIBRARY AND *THE EMU*.

The report of the Hon. Librarian was received and adopted. Mr. Barrett called particular attention to the fine addition to the library received from Dr. J. C. Phillips, of Harvard College, U.S.A., who had donated his *Natural History of the Ducks*. Mr. Campbell and others who had seen this work agreed that it was distinctly valuable, and it was decided to send a letter of thanks to Dr. Phillips from Congress.

The report of the Editor of *The Emu* was made verbally by Mr. Chisholm. He gave details of the difficulties attendant on the change of printers and by reason of the greatly increased cost of printing, and referred also to the trouble that had arisen in connection with the cost of reprints. Mr. Chisholm mentioned further that he had taken up the editorial work to relieve Mr. W. B. Alexander, who was in England, but who might return to Australia.

Discussion arose in regard to reprints, and it was decided to leave the matter in the hand of the Editor, as formerly.

BIRD PROTECTION.

Congress resumed at 10.30 a.m. on October 19, the first business being the declaration of the results of the election of officers. [These are given in their usual place on the back page of *The Emu*.]

Letters were read from Messrs. A. H. Mattingley (Victoria) and J. N. McGilp (South Australia), dealing with the conservation of bird-life. These letters were on the lines of arguments advanced in *The Emu* recently by the same writers, and had particular reference to the encouraging of landholders to protect useful birds. Mr. McGilp's claim was that landholders should be given control of the birds on their properties, and should be allowed to check what they regarded as an undue increase of any particular species.

In a general discussion on matters raised by these letters, the general feeling was that it would be dangerous to give any one landholder control of all birds, protected and non-protected, that chanced to visit his land.

Captain White, Mr. Chisholm, and Mr. Kinghorn spoke strongly against the placing of undue power of the kind in the hands of any private person. In any case, Mr. Chisholm pointed out, no Government would grant such a concession. He moved that no action be taken on the matter. Mr. Cayley seconded the motion, which was carried.

A report on behalf of the Committee on Reservations and Minimising Danger from Fires was given verbally by Mr. Barrett and reinforced by the President. It was then decided, on the motion of Mr. Barrett and Captain White, that the matter be referred to the new Council, with instructions to collect data from the various States.

VANISHING PARROTS.

The report of the State Secretary for N.S.W. was discussed,* and with it a letter from Mr. G. A. Heumann, of Beecroft, Sydney, calling attention to what he regarded as unfair restrictions placed on aviculturists, particularly with regard to breeding rare birds in captivity.

Mr. Chisholm expressed the view that the diminution of certain beautiful parrots, particularly those of the genera *Psephotus*, *Neophema*, and *Polytelis*, was a national calamity. He discussed the position of such birds as the Paradise Parrot, the Scarlet-chested Parrot, and the Turquoise Parrot, and said it should be possible to make an effort to rehabilitate these birds by breeding them in captivity with a view to releasing them in suitable areas.

The President agreed that it should be worth while to make such an effort. He said that when in England he had heard the view expressed that Australia's Parrots were one of the most beautiful groups of birds in the world.

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* For the various State Secretaries' reports see pp. 176-183.

Mr. Cayley, Mr. Kinghorn, and Captain White also spoke. The last-named blamed the imported Starling for spreading disease among Parrots. Domestic cats gone wild were also terribly harmful to such birds. Rare Parrots could be bred in captivity, but there would be many difficulties in re-establishing them in a wild state.

Mr. Chisholm moved: "That the R.A.O.U. views with sorrow and alarm the serious falling off in the numbers of many of Australia's beautiful Parrots, and urges that each State Government take cognisances of the matter with a view to breeding up rare species in approved private aviaries and endeavouring to re-establish them on suitable sanctuaries."

Mr. Barrett, in seconding the motion, called attention to the harm wrought among Parrots by trappers and egg-collectors in the Victorian Mallee. He also condemned trading in these birds with other countries.

Mr. Campbell supported the motion, which was carried unanimously.

BIRDS AND PRICKLY PEAR.

The report of the State Secretary for Queensland gave rise to considerable discussion concerning the relationship of birds, and particularly the Emu, to prickly pear. Mr. A. M. Lea, Government Entomologist of South Australia, who was present at Congress, was able to show that only a brief time previously he had taken at least 2,991 caterpillars from the stomach of one Emu. He produced the caterpillars and said that the total could readily have been made larger, but he had only counted definite caterpillars, and taken no account of "squash."

This information was used with effect by the President when speaking at the civic reception on the previous day, and it was supported by other evidence tendered by members. The discussion crystallised into the following motion, framed by Mr. Chisholm and Mr. Campbell and carried unanimously:—

"This Union, representing working ornithologists in all States of Australia and also New Zealand, has carefully considered the case against the Emu, the Crow (or Raven) and the Scrub-Magpie, as set out in the annual report of the Queensland Prickly Pear Commission, when seeking to justify its action in placing a bonus on the heads and eggs of these birds. While finding no fault with the motives of the Commission, we hold that the evidence upon which it based its action is somewhat suspect, in that landholders and settlers may be tempted to give evidence against these birds because of the bonuses. We hold also that the evidence of these observers is largely superficial, and we point to the fact that many other landholders contend that the Emu, at all events, is not a drastic factor in the spread of prickly pear.

"We further affirm that, in our opinion, the destruction of 8,441 Emus and 7,117 Emu eggs in Queensland in five months of this year is an alarming thing, particularly as this bird is not only a distinctive national figure but of outstanding economic value. The Pear Commission's report states that the Emu is of practically no value, but this opinion is swept aside, and the Commission's general statement of case seriously impaired, by researches recently made into the food of Emus by a prominent entomologist. In the stomach of one Emu were found 2,991 injurious caterpillars, equal, probably, to 10,000 in one day. This fact alone, we suggest, is sufficient to warrant the Prickly Pear Commission ceasing destruction of Emus, pending investigation of the position on a proper scientific basis.

" As for the Crow, it is entirely wrong to state, as the Commission's report does, that this bird ' has no friends amongst graziers.' Many members of the R.A.O.U., who are graziers, protect this bird. We suggest, therefore, that the position in respect of the Crow should be definitely ascertained by a detailed and scientific examination of the stomach contents of a considerable number of birds, over various seasons."

STATE GAME LAWS.

Arising from the report of the State Secretary for Tasmania, pleasure was expressed at the resuscitation of the Gould League of Birdlovers in that State, and also at the proposed strengthening of the Animals and Birds Protection Act.

On the motion of Mr. Chisholm and Dr. D'Ombrain, it was resolved that Congress express pleasure at the proposed action of the Tasmanian Government, and urge that if a Board were appointed to to control fauna conservation, due recognition be given the advisability of having zoologists as members of such Board.

The discussion evolved then into a general review of the " game " laws of each State. Mr. Kinghorn outlined the general position and indicated what he regarded as loopholes. Dr. D'Ombrain spoke in support, and on his motion, seconded by Mr. Campbell, it was agreed that a committee investigate the fauna conservation laws of each State with a view to bringing them into harmony. The Committee appointed was as follows :—Messrs. J. R. Kinghorn and F. Lynne Rolin (N.S.W.) ; R. T. Littlejohns (Vic.) ; J. Sutton (S.A.) ; G. H. Barker (Qld.) ; D. L. Serventy (W.A.) ; and Clive Lord (Tas.).

Discussion also took place on the reports of the State Secretaries for Victoria and Western Australia, respectively. The President and Mr. Campbell remarked that good work was being done by members in both of these States.

NEW ZEALAND SANCTUARIES.

The report of the State Secretary for New Zealand was also discussed. The President referred to the islands off the coast as being potentially valuable fauna reserves.

Congress supported this point, and it was agreed, on the motion of Messrs. Barrett and Campbell : " That in view of the fact that certain species of New Zealand birds are threatened with extermination on the mainland at no distant date, this Congress urges that the Dominion

Government create more island sanctuaries, free from enemies, and have transferred to them living examples of the birds in question. This is the only sure means for preserving some species, such as the Weka."*

STATE BRANCHES.

The notices of motion, as set forth on the voting papers, were introduced, the President pointing out that, although the postal vote on these was informal, they could now be moved and voted on.

Mr. A. J. Campbell, on behalf of Mr. A. G. Campbell, moved: " That it be an instruction to the incoming Council to take steps to establish local branches as provided for in Article 26." The mover read a paper on the subject on his son's behalf.†

Dr. D'Ombrain, in seconding the motion, pointed out that the whole of the ornithological activities of Australia could not properly be controlled from Melbourne. Each State should have its own definite branch of the R.A.O.U.

The President spoke strongly in support of a broad Australasian outlook; Mr. Chisholm pointed out that a Branch was formed in Queensland some years ago and that the N.S.W. Branch was functioning actively; and Mr. Kinghorn stated that he had taken steps to start Bird Clubs in three inland towns of N.S.W.

The motion was carried, and it was suggested that a committee of the Council should go further into the matter.

At this stage Congress adjourned until October 21, the following day having been reserved for an outing to National Park.

REPRINTS.

The first business on Thursday, October 21, was a notice of motion by Messrs. J. A. Ross and D. Dickison: " That, owing to the greatly increased cost of printing, no reprints be issued free to a contributor to *The Emu*." As no one was present to move this motion it lapsed. Mr. Chisholm, as Editor, said it would be unwise to tie the Union to such a resolution. In any case, it was a matter for the Council and the Editor.

HEADQUARTERS OF THE R.A.O.U.

Mr. A. J. Campbell moved, in connection with the R.A.O.U. Article " to provide and maintain suitable premises in the city of Melbourne or its suburbs ": " That for very obvious reasons this business be undertaken at once, even if *The Emu* has to be reduced in size to meet expenses."

Mr. Campbell spoke emphatically as to the unsuitability of the present headquarters of the Union, and he was supported by Mr. Barrett.

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* Mr. E. C. Sanderson, of Paekariki, New Zealand, has since written to the R.A.O.U., pointing out that practically all suitable islands are already sanctuaries. What is needed, he says, is better safeguarding of existing sanctuaries. The same need obtains in Australia.—EDITOR.

† See *ante*, p. 193.

Other members agreed that the premises were in no way worthy of the R.A.O.U., but it was pointed out, by the President in particular, that Congress had nothing before it from the Council on the question of finance.

Eventually, it was agreed : " That it be an instruction from Congress to Council to take immediate steps to remove fron the present headquarters into more suitable premises, either in Melbourne or its suburbs."

BADGES AND AWARDS.

Mr. Barrett moved : " That it is desirable to issue a suitably designed membership badge, which may be purchased by members of the Union at a cost not exceeding three shillings and sixpence." Discussion on this project was generally favorable, though it was suggested that instead of selling the badge it should be incorporated in the member's subscription, the latter to be raised accordingly. Such badge, it was thought, should be small yet distinctive. Congress deputed Messrs C. Barrett, R. T. Littlejohns and N. W. Cayley to draw up designs for submission to the Council.

Messrs. R. T. Littlejohns and S. A. Lawrence had given notice of motion : " That it is desirable to award, by decision of a committee appointed at each Congress, a suitable diploma or medal to the member who has performed, during the year, the most notable original research regarding the economic value or some other phase of native birds, either generally or with respect to particular species."

This proposition fell through for lack of a mover or seconder, but it was agreed that Council should consider the establishing of some kind of award, though not annually, as in some years the work might not be deserving. It was felt that something should be done to encourage young students.

REVISION OF RULES.

Mr. Chisholm moved and Mr. Wolstenholme seconded : " (a) That it is desirable that the Articles of Association be revised and amended ; (b) That a committee be appointed at this Congress to make recommendations for amendment of the Articles of Association, and that the report of the committee be presented to and considered by the same Congress."

After Mr. Chisholm had pointed out various directions in which amendment was necessary, the composite motion was carried, and it was decided that the Committee referred to consist of Messrs Barrett, Chisholm, and Wolstenholme, these three to consult during the Camp-out and report to Council.*

It was also agreed that the attention of the General Secretary be directed to the necessity of sending a copy of the Articles of Association to each new member

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* Illness on the part of Mr. Wolstenholme prevented this work from being completed.—EDITOR.

Mr. Cayley and Dr. D'Ombrain moved : "That it is desirable that the basis of the election of officers of the R.A.O.U. be amended." After discussion, it was decided to refer this matter also to the committee of revision of the rules.

AUSTRALIAN MUSEUM NOMENCLATURE.

Mr. A. J. Campbell brought up a matter relating to a circular which was issued in an *Australian Museum Magazine*. This circular dealt with the projected issue of a series of coloured post-cards of birds, and he pointed out that the names used were those used in Mathews and Iredale's List and not those accepted by the Checklist Committee.

There was a good deal of discussion, and as several members appeared to think that the Ornithological Department of the Museum had dealt with the matter, Mr. Kinghorn explained that officially he knew nothing of the issue. He had never been consulted, and the cards were in the hands of other people, not connected with the Bird Department.

On the motion of Mr. Campbell, seconded by Mr. Barrett, it was resolved : " That the Trustees of the Australian Museum be invited to reconsider some of the scientific and vernacular names of birds on post-cards about to be issued, and to bring these names into line with the Official Checklist of Australian Birds, recently published by the R.A.O.U. The Union is entirely in favour of the objects of the post-cards. It is pointed out that the Checklist names are ones that will be officially used throughout the world, and we suggest that the Australian Museum would be unfair both to itself and to the R.A.O.U. in using other names."

NEXT CONGRESS.

It was agreed that next year's Congress be held at Perth, Western Australia.

Mr. C. Coles moved that the Council be instructed to consider Papua as a camping area in the not-far-distant future. Probably, he said, such a camp would have to be held in May or June.

Dr. C. Anderson seconded the motion, which was carried.

VOTE OF THANKS.

Cordial votes of thanks were passed as follows : To the Trustees of the Australian Museum for use of the lecture hall ; to Dr. Anderson (Director) and Mr. Kinghorn (in charge of the bird collections) for facilities for work among the collections ; the the office-bearers during the past year, and especially the Hon. Gen. Secretary, Mr. Dickison, and to the President for able conduct of the Congress.

Mr. Ashby spoke highly of the educational work being carried on by the Australian Museum, and Mr. Barrett praised the quality of the *Museum Magazine*.

Congress concluded early in the afternoon of Friday, October 22.

Congress Lectures and Outings.

INTERLUDES in the Congress sessions were provided by several pleasant meetings and outings.

On October 18 the N.S.W. Section of the R.A.O.U. entertained visitors at a gathering at their " home " in the room of the Royal Zoological Society. The Presidential address was delivered at this meeting, and after delivery it was discussed interestingly. A number of attractive lantern slides were shown by Mr. N. W. Cayley. Another feature of the evening was the imitation of bird-calls by Master Frank Clark. Light refreshments concluded a pleasant evening.

On the evening of Tuesday, October 19, public addresses were delivered at the Australian Museum under the auspices of the R.A.O.U. The President of the Union (Mr. Ashby) held his audience closely interested with a talk on " Mound-building Birds "; Captain S. A. White gave one of his popular addresses on the economic value of certain Australian birds; and Mr. E. Le G. Troughton delivered a fascinating lecture on " Bird Collecting with the late Allan McCulloch." Mr. Ashby's address was illustrated with specimens, and Mr. Troughton showed a number of admirable lantern slides and also a motion picture taken by Mr. McCulloch and himself on Lord Howe Island. A feature of the motion picture was the insight it gave into the home-life of Tropic-Birds.

NATIONAL PARK VISITED.*

On Wednesday, October 20, twenty-two visitors and eight N.S.W. members were the guests of Mr. Frank Farnell, Chairman of National Park Trust, at an outing to National Park. Some went by cars and others by train; the " trainees " disembarked at Sutherland, and all motored through Waterfall to the " Bird Cabin " in the great Reservation. Visitors were enthusiastic regarding the cosy nature and pretty site of this cabin, which has been provided for natural history work by the Park trust. They were also enthusiastic regarding the birds of the locality—a fine playground of the Satin Bower-Bird was among the sights—and regarding the orchids and generally attractive vegetation of the area. Thence the party motored through the Lady Carrington Drive to " The Rest," Audley, where a first-class lunch was enjoyed and several interesting speeches were made. Mr. Farnell was cordially thanked for his hospitality. Subsequently, the party went by motor launch down the Port Hacking River to Gundamaian, inspected the cottage made available by the trust for biological work, and returned to " The Rest " for afternoon tea. Sydney was reached again about 7 p.m.

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* For account of previous R.A.O.U. outing to this area, see *Emu*, Vol. IV., p. 157 (1905).—EDITOR.

R.A.O.U. DINNER.

On the evening of Thursday, October 21, a dinner was held under the auspices of the R.A.O.U. at Cahill's cafe, O'Connell-st., Sydney. Mr. Ashby presided and among the guests were the Chief Secretary of N.S.W. (Hon. C. C. Lazzarini, M.L.A.), and representatives of kindred societies. Proceedings opened with the toast of " Our Patrons the King and Queen."

" The State Parliament " was proposed by Mr. A. H. Chisholm, who drew the Minister's attention to resolutions of Congress concerning Emus and Parrots, co-ordination of game laws, etc. He also suggested that honorary boards of naturalists could probably exercise better control of measures for the protection of fauna and flora than could busy, unskilled departmental officials.

Mr. Lazzarini, in reply, delivered what one delegate declared was the best " conservation of birds " speech he ever heard from a Minister of the Crown. He promised to consider all the suggestions made, and declared that the time had arrived when none of Australia's valuable birds should be allowed to go out of the country except for scientific purposes. He announced also his intention of bringing in an amending bill to tighten up conservation by dealing more effectively with the trapping of birds and prohibiting the carrying of firearms in sanctuaries.

A presentation was made by the President, on behalf of the Checklist Committee, to Dr. J. A. Leach (convener) for his untiring work on the second Edition of this enterprise. Mr. Ashby spoke most cordially of the Checklist and laid emphasis on the enthusiatic labours of Dr. Leach. In the absence of Dr. Leach, the presentation was received on his behalf by Mr. A. J. Campbell, who made a most interesting speech in reminiscent vein.

The toast of " The R.A.O.U." was submitted by Mr. A. F. Basset Hull, C.F.A.O.U. (Hon. Secretary of the R.Z.S.) and acknowledged by Dr. E. A. D'Ombrain (N.S.W.), Mr. Charles Barrett (Vic.), Dr. G. Murray Anderson (Tas.), and Capt S. A. White (S.A.). " The Visitors " was proposed by Mr. J. R. Kinghorn (Chairman of N.S.W. Section) and acknowledged by Mr. F. E. Wilson (Vic.).

Enjoyable musical items were given by Miss F. Page, Dr. F. R. Crouch, and Mr. G. C. Clutton. These artists were thanked on behalf of the company by Mr. N. W. Cayley, who also took occasion to extend felicitations to Mr. E. J. Bryce, R. A.O.U., who was about to embark on an extended tour of Africa.

Mr. A. H. Evans, Cambridge, England, has for sale Volumes 3, 4, 5, and 6 of *The Emu* for £3.

Congress Reports.

REPORT OF THE HON. GENERAL SECRETARY.

During the year 56 new members were enrolled: Victoria 9; New South Wales 30; Queensland 9; South Australia 1; New Zealand 3; British 1; Foreign 3. Resignations have numbered 23 and deaths 8, and 5 members have had their names removed from the roll through failing to pay their subscriptions. The total membership is 567, made up as follows:—Victoria 181; New South Wales 157; Queensland 67; South Australia 31; West Australia 14; Tasmania 19; New Zealand 20; British 39; Foreign 39; exchanges 22; total 589. To provide for future requirements 625 copies of *The Emu* are printed each quarter.

In comparison with previous years deaths amongst members have been numerous during the last twelve months. It is with regret that the Council has to record the loss of the following members:—Messrs. J. Boyle, I. W. De Lany, F. R. de Little, Jas. Hogan, E. C. Osborne (Victoria), Miss H. L. Sanderson, Mrs. S. A. White (South Australia), and Mr. F. W. Price (New South Wales).

Well-attended conversaziones have been held quarterly at the National Museum, Melbourne, where interesting lectures and discussions on ornithological matters have taken place. The Council is indebted to Dr. J. A. Leach, Mr. A. J. Campbell, and others for their lectures at these meetings.

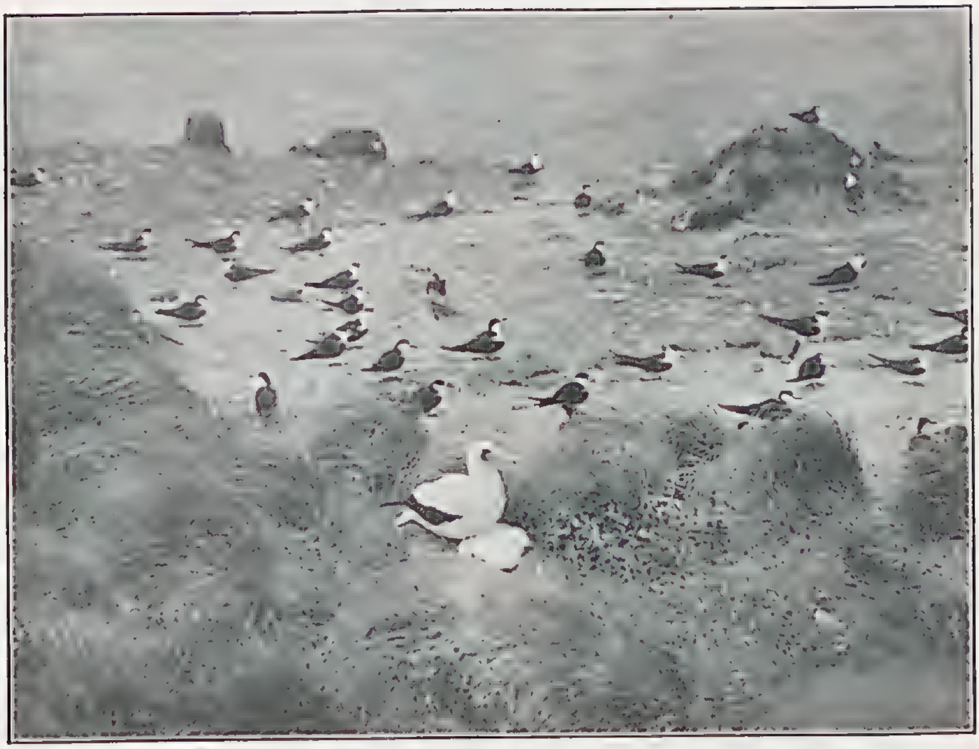
The Emu is still maintaining its prominent place amongst the ornithological journals of the world. The exorbitant cost of reprints has been causing the Council serious concern, and authors have been requested to purchase copies of *The Emu*, instead of having reprints of their articles.

Bird protection has received a considerable amount of attention and investigation during the year. Last April a deputation of members interviewed the Council and urged that more vigorous steps be taken to suppress the destruction of useful birds, and also to have several species of Parrots and Cockatoos placed on the list of permanently protected birds. Efforts have since been made by the Council to carry out the proposals made by the deputation.

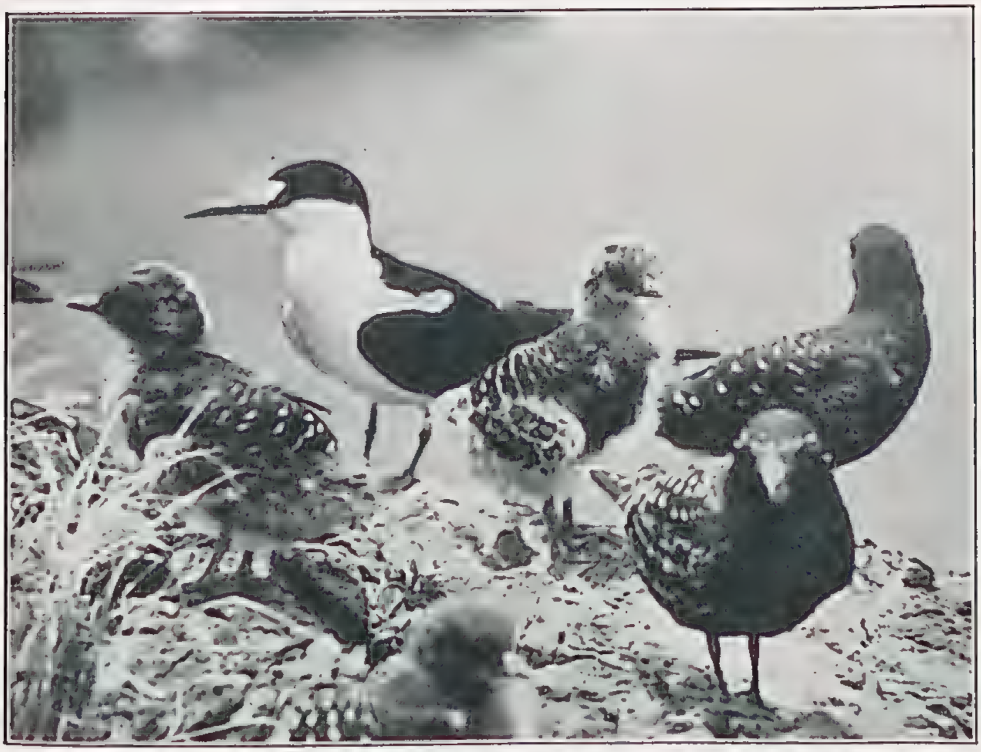
The Union is still occupying a room at 376 Flinders Street, although efforts have been made to obtain larger and more suitable premises. Owing to the risk of fire a bookcase containing the standard ornithological works of the Union has been transferred to the National Museum, where it will be housed until such times as a more commodious room is available.

The financial position is only fair, as set out in the Treasurer's Balance-sheet.

D. Dickison,
Hon. General Secretary.



SOOTY TERNS BROODING: MASKED GANNET AND YOUNG IN FOREGROUND.



SOOTY TERN AND YOUNG.

These are examples of a fine series of photographs secured by Mr. E. F. Pollock, R.A.O.U., during a recent visit to Lord Howe Island and the Admiralty Group.

NATIONAL MUSEUM MELBOURNE

REPORT OF LIBRARIAN.

Since the last report (October 1925) the following publications have been received:—Periodicals:—"The Auk," Vol. XLII, Pts. 3 and 4; Vol. XLIII, Pts. 1-3; "Australian Zoologist" Vol. IV, Pts. 1-4; "Avicultural Magazine," Vol. III, Pts. 4-12; Vol. IV Pts. 1-8; "Austral Avian Record," Vol. V, Pt. 4; "Aves" (indexing avian literature, etc)., edited by W. Sclater; "Bird Lore," Vol. XXVII, Pts. 3-6; Vol. XXVIII Pt. 1; "British Birds," Vol. XVIII, Pt. 12; Vol. XIX, Pts. 1-12; Vol. XX, Pts. 1-2; "Condor," Vol. XXVII, Pts. 3-6; Vol. XXVIII, Pts. 1-3; "Ibis," Vol. I, No. 3; Vol. II, No. 1 (12 series); "Norsk Ornithologisk Tiddeskrift," Pts. 6 and 7; Proceedings of Linnean Society of N.S.W., Vol. L, Pts. 2-5; Vol. LI, Pts. 1-2; Proceedings of the Royal Soc. of Tasmania for 1925; "Queensland Naturalist," Vol. 5, Pts. 2-6; "Révue Francaise d'Ornithologie," Pts. 193-207; "South Australian Ornithologist," Vol. VIII, Pts. 3-7; "Societe Zoologique de Geneve," Vols. 1 and 2; "Victorian Naturalist," Vol. XLII, Pts. 2-12; Vol. XLIII, Pts. 1-5; "Wilson Bulletin," Vol. 37, No. 4; Vol. 38, No. 1; "Zoologica," Vol. VI, Pts. 1 and 2; "Zoological Record," Vol. XLI.

Several pamphlets, mostly reprints from American and English journals, have been received, together with several volumes of great interest to ornithologists. Among these are "Problems of Bird Migration," by A. Thomson; "The Origin of Birds," by Gerhard Heilmann; "Birds of Eastern China," by J. D. La Touche, Pts. 2 and 3; "Birds of the Fiji Islands," by Dr. Casey A. Wood and Dr. A. Wetmore; "Birds of Morocco," and the last volumes of Dr. Phillips' "Natural History of the Ducks." Amongst the lighter literature received are "Sally Warner," a nature novel by Florence M. Irby, and another of "Beachcomber" Banfield's very interesting books, "Last Leaves from Dunk Island."

The library has now attained quite considerable dimensions, and continues to expand beyond the limited accommodation of the present building. Some time ago it was thought best to remove a large portion of the books to safer housing at the National Museum, which undertaking was satisfactorily carried out. However, the remaining volumes are extensively used by members, who are looking forward to the time when all the library will be thrown open in a more palatial building.

D. W. J. Cannam.
Hon. Librarian.

BALANCE SHEET

RECEIPTS.

Subscriptions—						
Arrears	£75	12	0			
Current (includes £15/15/- fully paid up)—	377	18	0			
Advance	35	14	0			
				£468	4	0
Sales "Emu" £16/5/8; Covers £2/4/6; Index £1/10/0; Advertisements £4/0/10; Interest £14/14/0; Exchange £4/17/3 ...				43	12	3
Illustration Fund				7	16	6
Trust Fund, Interest				60	0	0
				£579	12	9
Savings Bank Cr. 1/7/25				180	0	0
General A/c Cr. 1/7/25				50	0	0
National Bank Dr. Balance 30/6/26				10	10	3
				£820	3	0

ASSETS.

Savings Bank Cr. Balance				£250	0	0
Subscriptions, Arrears estimated good	£38	17	0			
Less Prepaid	36	15	0			
				2	2	0
Library				450	0	0
Furniture and Specimens				350	0	0
Blocks, Estimated at				10	0	0
"Emus," Estimated at				50	0	0
Tent, Material, Punch, and Register				3	17	6
Reserve Fund, Commonwealth 6 p.c. Inscribed Stock 1930				100	0	0
Trust Fund, Commonwealth 6 p.c. I.S. 1930 ...				1000	0	0
				£2215	19	6

Z. Gray, L.C.A., *Acting Hon. Treasurer.*

Melbourne, 1/7/1926.

Year Ended June 30th, 1926.

EXPENDITURE.

"Emu," Vol. 25—Printing	£360	4	0			
Reprints	29	2	0			
Illustrations ...	58	4	3			
Envelopes, etc. ...	8	12	4			
				£456	2	7
Annual Meeting—				8	7	4
Postage £14/15/7; Stationary £2/6/2; Exchange £4/9/5; Typing £2/17/6; Covers £3/1/4; Commission £2/11/0; Bank Fee 5/-; Cheques 2/6				30	8	6
Room Rent £52/15/0; Light 7/1; Library 8/8; Insurance £3/4/10				56	15	7
				£551	14	0
Trust Account Dr. 1/7/25				18	9	0
Savings Bank Cr. Balance 30/6/1926				250	0	0
				£820	3	0

LIABILITIES.

National Bank Dr. Balance	10	10	3
Balance	£2205	9	3
	£2215	19	3

Audited and certified correct.

JAMES BARR, F.C.P.A., S. A. LAWRENCE,
Hon. Auditors.

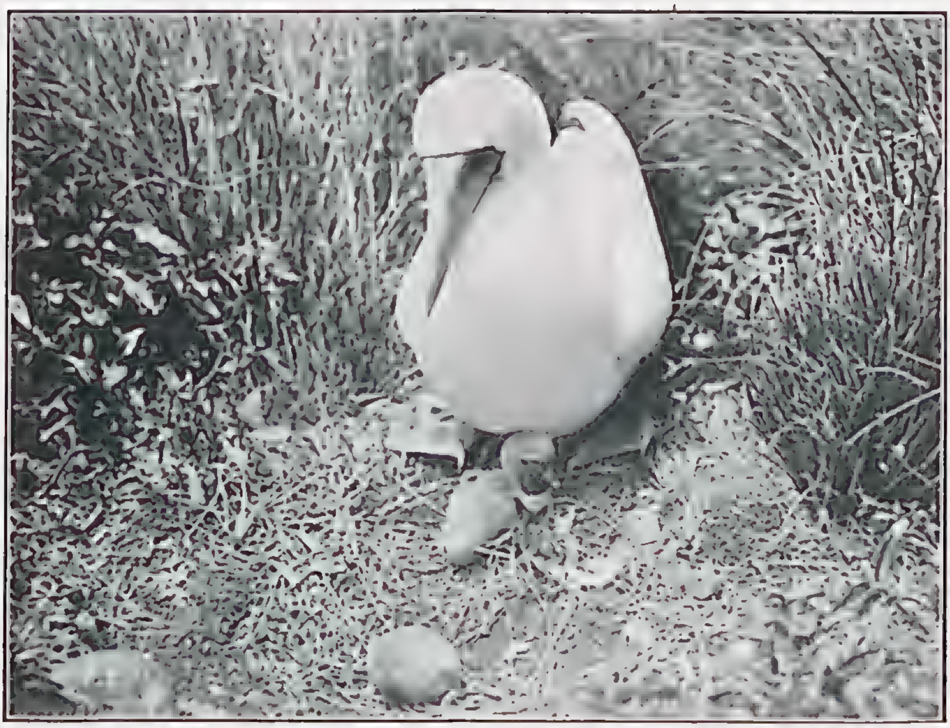
6/10/1926.

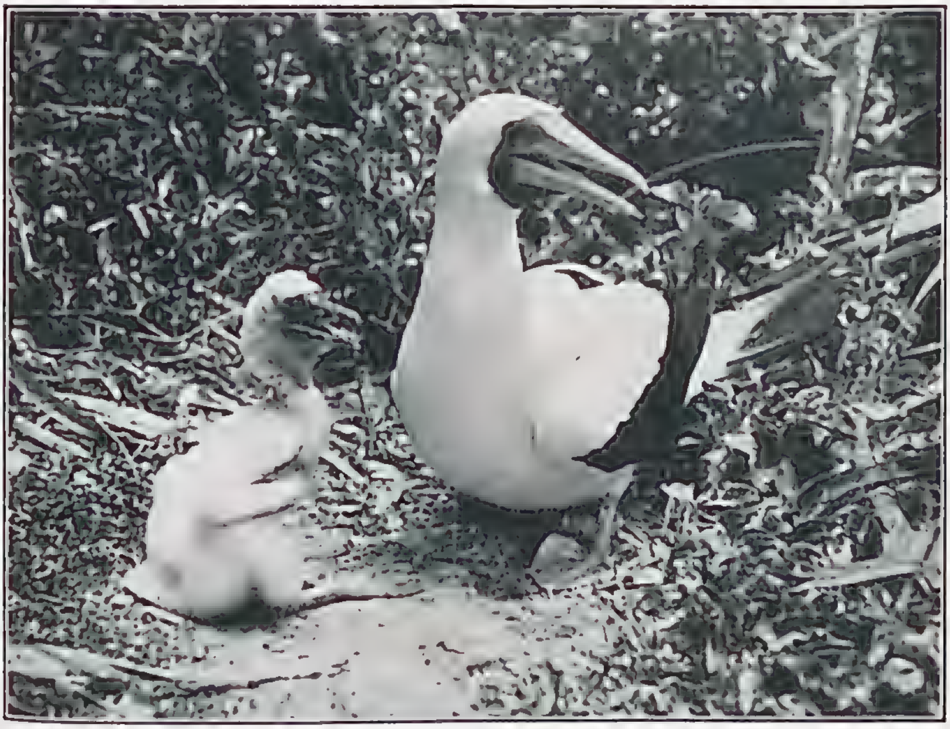
REPORT OF THE HON. STATE SECRETARY FOR N.S.W.

In submitting the annual report of the Section, we have to say that the year has been a satisfactory one. The lecturettes and discussions have been pleasant and informative, and meetings generally have been well attended. A good deal of interesting material accrued from a trip to the Capricorn Islands, Central Queensland, in November, in which several of our members took part. That was the only expedition of a general nature held during the year, but members individually and in small groups have made frequent visits to the Bird Cabin in National Park, some of these visits extending over several days. The Cabin has proved exceedingly useful in this respect, and it will continue to do so. Up to the present we have not attempted any directly systematic work there, but we hope later to achieve something on a larger scale than hitherto, and to publish a general account of the ornithology of National Park, in the interests of the Park, the public, and ourselves. Workers in other branches of natural history have also used the Cabin, notably a University group who have been attempting an ecological survey. This work is now nearly complete.

Members of the Section take pride in the fact that they were instrumental in securing for the Australian Museum, last month, the Grant collection of Australian and foreign birds. The collection in question contains approximately 3,200 skins of birds, about half of them being of Australian origin, and the others representing many countries. Every continent is represented, and also many islands, notably New Guinea, Borneo, Fiji, the Solomons, Timor, the New Hebrides Samoa, Ceylon, Madagascar, and the Philippines. All the beauty of the rainbow is contained in the plumage of these birds, and there is a strong interest attaching to many of them by reason of their novelty and rarity. Perhaps the " show " specimens in the collection are the Birds of Paradise. Nearly twenty species of these brilliant creatures are represented by about forty specimens. The difficulty of securing Paradise Birds and their increasing rarity are in themselves facts that emphasise the value of the collection. These birds skins were got together by the late Robert Grant, for many years taxidermist on the staff of the Australian Museum. Mr. Grant was a very able collector and a skilled taxidermist; he knew what birds to secure and how to look after the skins to the best advantage, and his visits to wild places in the tropics gave him opportunities of securing rare species. He worked on his collection from about 1890 to 1916, so that these birds represent skilled work extending over 26 years.

When Robert Grant died the collection passed into the possession of his son, Henry, who, being also a skilled taxidermist, was able to care for the birds. In time he decided to sell the collection. An offer at once came from South Africa. Then came a bid from the United States, the amount offered being about £750. Mr. Grant was sufficiently patriotic, however, to desire that the collection should remain in Australia. He remembered that Australian students were placed at a disadvantage by the fact that most of John Gould's type specimens of birds were located in Philadelphia, and he did not wish to stress the disadvantage. It was at this stage that Mr. J. R. Kinghorn,





MASKED GANNETS AND YOUNG, ADMIRALTY ISLANDS.

Photos. by E. F. Pollock.

NATIONAL MUSEUM [illegible]

zoologist at the Australian Museum, took up the matter. He organised a small committee from this section to act with him, and personally communicated with various citizens, pointing out the value of the collection and the wisdom of straining every effort to prevent it leaving Australia. The result was throughly gratifying. Five men each gave £100; others gave smaller amounts, and within a few weeks Mr. Kinghorn was able to pay Mr. Grant something over £600 and take over the collection at the Australian Museum. The rarity of many of the species is emphasised by all naturalists who have seen the list, among them Mr. H. L. White, the well known pastoralist-ornithologist, of "Belltrees," Scone, who was one of the donors. Mr. White is very competent to judge on this point, for he has spent much more money on ornithological collections than anyone else in Australia. Among the Australian birds represented are many familiar species, of course, but there are also such rarities as Prince Albert's Lyre-Bird, the Rufous Scrub-Bird, the Paradise Parrot, the Turquoise Parrot, the Scarlet-chested Parrot, the Superb Parrot, the Golden Bower-Bird (a fine series of these beautiful Bower-Birds is included), the Black-throated Whip-Bird, and the Lilac-crowned Wren. Some of the birds mentioned are believed to be extinct. In any case, there is no chance of Australians generally ever seeing them, save in a collection such as this.

Mention of rare Parrots recalls the fact that the position of these birds in Australia is something in the nature of a national calamity. The broad-tailed Parrots generally appear to be holding their own fairly well, and certain members of other genera are not in danger. But the sad fact is that several of the *Psephotus* Parrots are almost extinct; almost every one of the brilliant *Polytelis* Parrots is in grave danger; and practically the whole of the seven members of the *Neophema* genus may disappear in the near future. It should be possible to breed up some of these species in well-kept aviaries, under national supervision, with a view to re-establishing them throughout the country. Meanwhile, the survivors should be rigidly protected, and every effort should be made to check exportation.

N. W. Cayley,
Hon State Secretary.

REPORT OF THE HON. STATE SECRETARY FOR VICTORIA.

The monthly conversaziones have been well attended by members and friends. Our thanks are due to Messrs. A. J. Campbell, A. G. Campbell, J. A. Ross, A. H. E. Mattingley and Dr. J. A. Leach for their interesting lectures, and to Rev. Lang, Dr. A. N. McArthur, Mr. Howe, Mr. Bunn and others for instructive field notes. Most of the lectures were illustrated with skins from the H. L. White Collection, and were held in the bird-room of the National Museum.

A series of comprehensive lectures by Dr. Leach were broadcast by 3LO, thus stimulating public interest in every State. Lectures by Rev. Lang, Messrs. J. A. Kershaw, C. Barrett and N. Favaloro have been delivered throughout Victoria. The fact that requests are frequently received from various societies for lectures on birds, denotes a healthy public interest.

Throughout the State the game laws are being rigidly enforced by those in authority. Victorian members of the R.A.O.U. hope that something will soon be done to bring about uniformity of Australian game laws, especially those regulating close seasons.

The Advisory Committee have kept a close watch on all consignments of birds leaving the State and have succeeded in frustrating several attempted illegal exportations.

All members of the Union will be pleased to learn of the marked increase in the numbers of Egrets, Herons, and Spoonbills on the irrigation settlements neighbouring the Murray and its tributaries. For some time it was feared that the commercial value of plumes would result in the extermination of our beautiful Egrets, but since 1910, when the plume trade received its death-knock, the birds have gradually increased, and now it is no unusual sight to see Egrets and Spoonbills on almost every Channel bank.

NORMAN J. FAVALORO,
Hon. State Secretary.

REPORT OF HON. STATE SECRETARY FOR QUEENSLAND.

The outstanding feature of the year has been the terrible drought that has gripped us for practically the whole year. This had taken a heavy toll of wild birds. The Central West has had the hardest time of all, and messages from such members as H. G. Barnard, D. W. Gaukrodger and F. L. Berney show that conditions in their areas have been deplorable. Mr. Berney has been particularly unfortunate, for on his holding (about 120 miles west of Longreach) there has been hardly any rain for five years. (In 1925 the total registration on the run was 4.26 inches for the year.) But for artesian water the country would have been deserted long ago. Both Mr. Gaukrodger and Mr. Barnard report the deaths of Emus in great numbers owing to the absence of grass, and this brings me to the necessity of reporting the most shameful piece of bird legislation ever perpetrated in this State. It is the action of the authorities charged with the eradication of prickly pear, who have decreed the Emu a pest, and are paying a bounty of 2/6 on all Emus and 1/- each on their eggs. In last week's *Sydney Mail* (6/10/26) there appears an illustration showing that a farmer living near Surat delivered a batch of 1280 eggs in one lot, receiving £64 for this wicked destruction of our national bird.

Apart from the ethics involved in the case of the Emu, and the number of other agencies spreading the pear in a far more effective manner than the bird does, Mr. H. G. Barnard states that while admitting that the Emu does eat the fruit of the plant, and that the seeds will germinate after passing through its stomach, the quantity of pear propagated by this means is comparatively small. By far the greater spread of this plant is due to cattle breaking off portions when feeding on or around it. The broken parts, being self-supporting, readily root and grow. The seed when dropped also germinates readily, but unless it gets rain within a few days after germination, the baby plant usually withers and dies. Again, if one compares the spread of pear in Emu country with that in non-Emu country, the Emu must be exonerated at once.

To any impartial judge, therefore, it is plain that the responsibility of the Emu is small and as far as the problem of eradication is concerned almost negligible. This being so, and the protection of this unique and national bird being a necessity, I trust that Congress will do all in its power to have the hand of destruction stayed before it is too late.

Mrs. W. M. Mayo, R.A.O.U., has initiated a movement which has for its object the training of student teachers in Nature Study. Briefly, the idea is to give outdoor instruction to the students of the Teachers' Training College one afternoon each month. Under the guidance of Mrs. Mayo, Mr. C. T. White (Govt. Botanist), Mr. Herbert (Dept. of Biology, University), Mr. H. A. Longman (Queensland Museum), Mr. W. B. Francis (Assistant Government Botanist) and myself, the students are taken to convenient localities, including the Museum and Botanic Gardens, and then split into groups for talks and guidance on birds, animals and plants. Advantage was taken of a recent visit by Mr. A. H. Chisholm to Queensland to add him to the list of instructors ; he addressed about 50 student-teachers on the bank of a creek at Ashgrove.

Pleasure should be expressed at the continued policy of the Queensland Government to preserve suitable areas as sanctuaries for fauna throughout the State. Among the areas so proclaimed this year are the following :—Oyster Cay, Barrier Reef ; Mt. Cootha ; C. of E. Boys Grammar School Ground and Park ; Indooroopilly Golf Links ; Swindin Mountain, Bowen (12,106 acres) ; Possession Island, Torres Straits ; Kalamia Plane, Lower Burdekin ; Green Island, Cairns ; Mia Mia, Marami, Mackay ; Springbrook Gorge.

During the year the season was thrown open for 'possum trapping and over 60,000 skins were on the market within the first week, showing clearly that the season had been anticipated. Although the " spot-light " is illegal, information points to the fact that the greater number of animals are taken through this means. It came to our knowledge that pressure was being placed on the Department to declare an open season for native bears, so that an accumulation of skins, that had no doubt been taken by " spot-lighters " when out for 'possums, might be put on the market. We moved the different societies interested to protest in the right quarter and enlisted the sympathy of the Press, which secured from the Minister a definite promise not to open the season.

Many trappers openly violated the sanctuaries in the pursuit of their calling, but it is impossible to get news in time to prosecute, which is to be regretted. Early in the year we had proof of the violations of the Bird Protection Act by quail-shooters in the Warwick district, but although we submitted evidence to the Inspector of

Police, nothing came of it. For this reason—the difficulty of getting the Department to move in the matter of penalties—our fine conservation Act remains practically a dead letter.

The Prevention of Cruelty Society now has two paid inspectors on its staff, and these two officials did fine service during the year in preventing consignments of birds, especially Finches, coming into the market in Brisbane. They were also very active against boys in the suburbs trapping Honey-Parrots.

A number of requests for permission to export bird skins and eggs have been dealt with by the Advisory Committee.

The need of supervision of the sanctuaries for nesting sea-birds in the bays and islands of the Barrier Reef is becoming more and more apparent, and the information supplied by the late Chas. Hedley, of the wholesale destruction of eggs, indicates the need of strenuous measures if these birds are to be saved from extinction.

GEO. H. BARKER,
Hon. State Secretary.

REPORT OF HON. STATE SECRETARY FOR TASMANIA.

The Tasmanian members of the Union welcomed the publication of the new Checklist, which should be of very considerable assistance to all students of bird-life.

The Field Naturalists' Club had been making a special endeavour to interest the schools in natural history, and the boys of the Hutchins School, in particular, have shown considerable interest in the matter, and certain of them are becoming keen students of bird-life. A further endeavour will be made during the coming year to extend this phase of activity, as a scheme is under consideration whereby the Girl Guides may also have a more general interest in the many interesting birds and animals which they meet with during their rambles in the country. Mr. M. S. R. Sharland's photographs of Tasmanian birds are interesting others in this branch of study.

Mr. Sharland, in conjunction with Mr. Knight, has been giving some attention to the Gould League of Bird-Lovers, and considerable progress has been made during the last few months in this connection. The League was established in Tasmania mainly through the efforts of Mr. G. W. Knight, of the Lindisfarne State School. The League is encouraged by the Education Department, and as a result Mr. Knight has advanced its claims and the membership now reaches several hundred children and teachers, representative of all parts of the State. Up to the present the certificate of the Victorian branch of the League has been issued to members, but it is hoped shortly to appoint Tasmanian officers and attach their names to a Tasmanian certificate. The League is allowed a certain amount of space each month in the *Tasmanian Teacher*, the official organ of the Teachers' Union.

Another item of interest is the proposal for Lyre-Birds to be introduced into the National Park. The Chairman of the National Park

Board interviewed Dr. Leach during a recent visit to Melbourne, and it is undertsood that there is some hope of Tasmania receiving a consignment of Lyre-Birds in the near future.

A further item that will claim attention during the coming year is the proposal by the Government to amend the Animals and Birds Protection Act with the idea of giving more efficient protection to our native fauna. Consideration has been given to the question of placing the control of this Act in the hands of a Board, appointed for the purpose. The Union will need to take an interest in this matter, for if such a Board is appointed the personnel will have a most important bearing upon the future of our fauna.

CLIVE LORD,
Hon. State Secretary.

REPORT OF HON. STATE SECRETARY FOR WESTERN AUSTRALIA.

Organised ornithology in this State has unfortunately made little progress since the Congress of the Union held in Perth in 1920. Individual enthusiasts continue their work independently, and with generally only two media for intercommunication in the W.A. Museum and the pages of *The Emu.* With the position as it is, the members which the Union attracts locally are mainly persons more or less actively interested in ornithology, there being little to induce those who are not deeply inclined to bird-study, but who would seek membership were the Union something more " tangible " locally than it is. *The Emu* would certainly attract subscribers if it were more widely known.

An important event was the holding in Perth, in August last, of the first conference to be conducted in Western Australia of the Australasian Association for the Advancement of Science. Several interstate members of the R.A.O.U. were amongst the contingent of visiting scientists participating in the proceedings; they included Professor J. B. Cleland, Dr. E. W. Ferguson, Mr. Clive E. Lord and Mr. H. J. Carter. The delegate of the R.A.O.U. to the conference was Lieut.-Colonel E. A. Le Souef, of Perth. The local committee of the Association issued a special handbook on science in Western Australia, a brief account of the bird life of the South West being contributed to it by Mr. L. Glauert, of the W. A. Museum.

Fauna protection matters have been advanced by the proclamation, at the instance of the local natural history bodies, of the National Park (3,300 acres) at Swan View, near Perth, as a reserve for native game, and the Porongorup Range, in the south, has been declared a Class "A" Reserve. Western Australia has now a very large area as reserves, but what is urgently required is that the reservations—or the most important of them—be supervised by rangers and be under the control of boards or trusts, they being at present under the somewhat nebulous jurisdiction of various Government departments and Road Boards. Personal supervision is quite lacking, excepting in those reserves exploited for the " tourist trade," such as Rottnest

Island, etc. Both the natural history organisations, the Royal Society and the Western Australian Naturalists' Club, are giving the subject their attention.

During the year there have been many complaints against Emus, the birds being charged with breaking down fencing. The Crow also has had its share of obloquy, but it is worthy of note that several pastoralists on the Lower Murchison have extended it their protection. The Chief Inspector of Fisheries (Mr. F. Aldrich) states that on Messrs. Atkins Bros'. Murgoo station he has seen flocks of some 50 Crows near the homestead, and an inquiry as to the position regarding lambs was met with the remark that the sickly lamb which the Crow would get was of no use.

Not so much activity is being directed against Rose-breasted Cockatoos (Galahs), they being regarded as helpful in checking the "double gee" (*Emex australis*) pest. A bird which has become a pest in apple-growing areas of recent years, is the White-tailed Black Cockatoo (*Calyptorhynchus baudini*); the complaints emanate from the Plantagenet district (including the centres of Albany, Mt. Barker and Denmark). The birds have developed a taste for apple pips, and in gratifying it destroy a large quantity of fruit, and they have been declared vermin in these areas.

The Twentyeight Parrot (*Barnardius semitorquatus*), is also in disfavour in apple country. Another bird which has given evidence of being occasionally harmful is the Black Duck. During the winter of 1924, two instances were reported (at Burges Siding and Beverley) of it being a pest on field peas. One farmer stated he counted 270 peas in the crops of two birds.

Concern is being expressed at the gradual spreading of the fox in country districts, it being prevalent in the mid-north. Ground-nesters, such as the Banded Plover, are reported to be suffering. With regard to the Bustard, motorists travelling in the country are unfortunately too willing to seize the opportunities afforded them of killing "Turkeys."

D. L. SERVENTY,

Hon. State Secretary.

REPORT OF HON. STATE SECRETARY FOR NEW ZEALAND.

The principal ornithological event of the year was the visit of the American schooner *France*, under the command of Mr. Rollo H. Beck, head of the Whitney South Seas Expedition sent out by the American Museum of Natural History. The *France* arrived at Auckland in December, 1925, and subsequently visited parts of the coast, the Antipodes, Bounty, and Chatham Islands, returning to Auckland in March, 1926. After refitting and forwarding her collections to New York she left for the New Hebrides in continuation of her voyage round the Pacific. Collecting was done mostly on the high seas but some birds were also taken on the islands visited.

Although through adverse weather conditions the full programme of the expedition could not be carried out, it is confidently hoped that the results when published by the American Museum of Natural History will add materially to our knowledge of New Zealand sea-birds, especially as the world-wide collections of the American Museum give opportunities for making comparisons not possible in New Zealand. There are still large gaps in our knowledge of New Zealand sea-birds, but these must remain until such time as good series of skins are obtained from each breeding colony.

The issuing of a permit to the Whitney Expedition to collect birds was taken exception to by the Bird Protection Society, and as a result of correspondence between the Society and the Government, the Minister of Internal Affairs stated that in future a foreign expedition would not be allowed to collect in New Zealand unless accompanied by Government officers. The subsequent publication by the Secretary of the Bird Protection Society of the correspondence between the Government and himself led to much newspaper comment, which showed a widespread interest in our native birds and also, it must be added, from some quarters failure to appreciate the aims of Museums and the necessity of good series of specimens for scientific research.

There are few if any parts of New Zealand not now over-run by rats and weasels, and consequently there seems little hope for such birds as the Kakapo, Thrushes, Crows and Saddleback. In one of his books Mr. Guthrie-Smith speaks of the Weka as the policeman of the bush, killing rats and thus protecting the smaller birds. But the story has another side. At the last conference of the New Zealand Acclimatisation Societies the President stated that Wekas had killed many rats, but that owing to the destruction of Wekas by weasels, rats had increased tremendously and were now the worst enemies of native birds. Surely, no better service could be rendered by the Bird Protection Society than the working out of some scheme to mitigate this peril. If this is impracticable, then the only thing left is to transfer the peculiar land birds to island sanctuaries where neither rats nor weasels exist.

At the Conference of Acclimatisation Societies above referred to, a remit to the effect that the Government be asked to arrange with the Australian Government an open and close season for the Banded Dottrel concurrently in both countries was adopted. The Banded Dottrel is at present on the list of absolutely protected birds, and it is to be hoped that a precedent will not be given for removing any name from that list.

The appearance of Mr. Guthrie-Smith's latest book, *Bird Life on Island and Shore*, adds another of his inimitable accounts of bird observing to the list of books on New Zealand birds. The most notable discoveries announced in this book are the presence of the Saddleback and Bush-Wren on Kotiwhenu, off Stewart Island.

In Auckland Mr. R. A. Falla gave a series of lectures on native birds, and in Wellington on September 2nd last a lecture was given by Mr. E. F. Stead, under the auspices of the New Zealand Acclimatisation Societies.

W. R. B. OLIVER,
Hon. State Secretary.

The Williams River Camp.*

BY CHARLES BARRETT, C.M.Z.S., Melbourne.

IN cool weather, not too long after rain, the journey from Dungog to the Upper Williams River must be pleasant; but we travelled the 26 miles in tropic heat, and each gathered more dust than a miller might beat from his apron. A long drive, for the most of us in an open truck, was very gladly ended at Cutler's Pass, where the tents were pitched among tall flooded gums. Settling down was no addition to weariness, for all the pioneering had been done before our arrival by Williams River men, under the direction of Mr. Alb. Edwards, who also lent a strong willing hand whenever needed.

A good camp we had: ample tent room, comfortable bush-bunks—saplings and sacks—and the cooking done by proxy. But heat and dust and flies combined to test our philosophy and our patience, and towards the end they were not suffered gladly. Forest and jungle alike were dry, ferns on the tree trunks and boughs were dying, and the filmy ferns and delicate mosses on river bank slopes, except where shadows lingered, formed sere instead of cool green drapery. Drought had set its seal wherever we wandered; even on Barrington uplands, though sleet and snow made a miserable night the lot of those who ventured to the Tops unprepared for bitter weather.

These were the minor discords of our week of harmonious fellowship in forest and brush on the Williams River. Already they are fading from memory, or are remembered only for smiling. Those were good days; and the nights were never dull for any member of our party. Having leisure, after diary-making, or setting and storing of specimens (the entomologists reaped a rich harvest), one might talk of many things or look up at the stars gleaming through branches of the white-boled eucalypts.

A short stroll from the camp took us often to the river, where, at the ford, it ran clear among boulders, not without music, and beyond a bend, deeply where we came for swimming. The river was our constant friend; at noon, or at the end of the hottest day, as well as early in the morning, it refreshed us and caused us to be glad that our camp was near neighbour of a mountain stream. We spent so many hours by the riverside that the Williams must flow through

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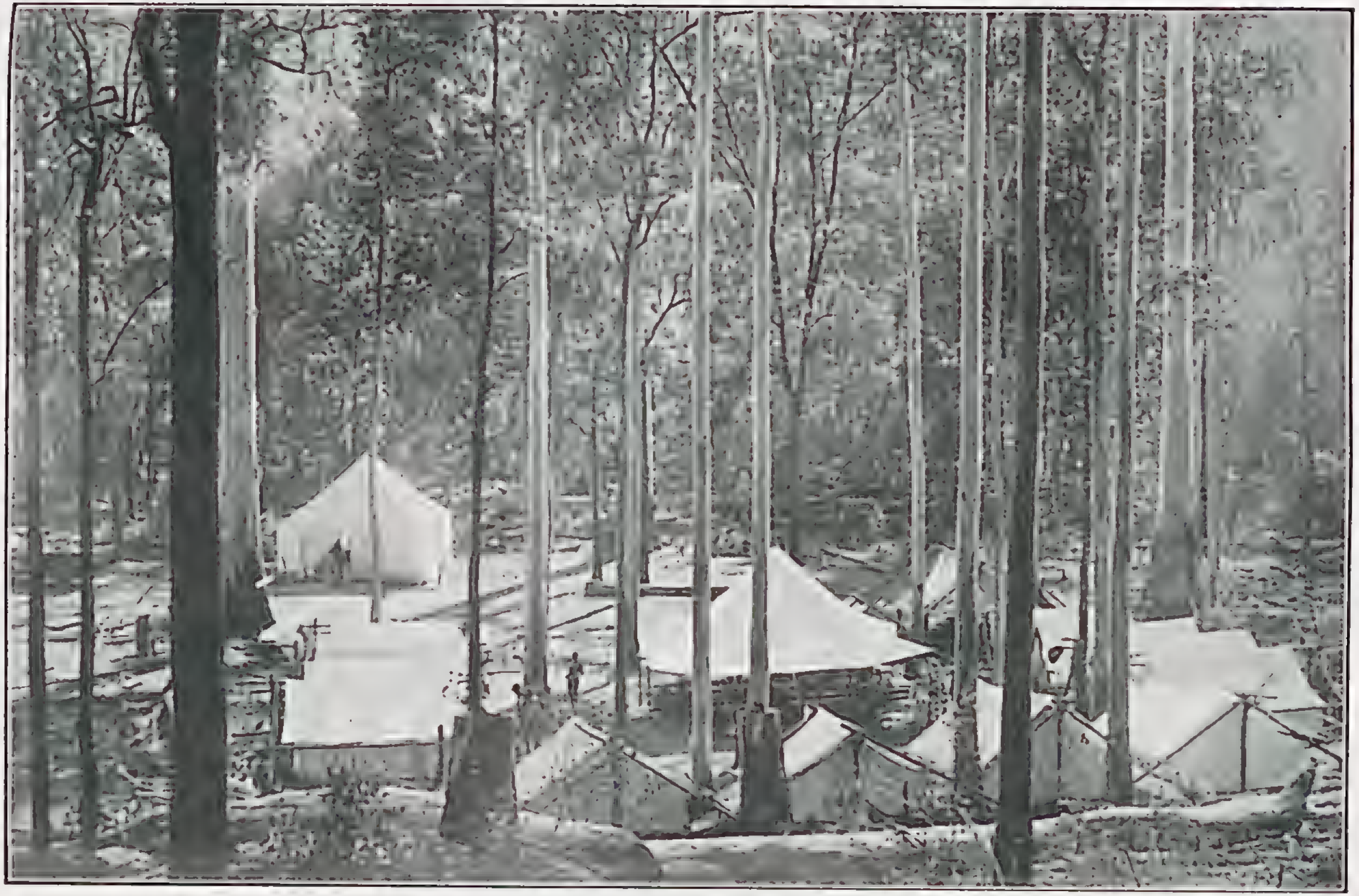
*Those who attended the camp-out were:—Messrs. A. M. Lea (South Australia); F. E. Wilson, C. L. Barrett, Mrs. J. W. Israel (Victoria); Dr. G. Murray Anderson, Dr. Bruce, Mrs. and Miss Anderson, Miss E. McDonald (Tasmania); Dr. E. A. D'Ombrain, Mr. and Mrs. Clifford Coles, Mr. and Mrs. Norman Chaffer, Miss Chaffer, Mr. and Mrs. C. A. Messmer, Miss E. Harnett, Mr. and Mrs. C. E. Howie, Miss E. Davies, A. Musgrave, T. G. Campbell, J. Russell, B. J. C. Bettington, J. S. P. Ramsay, A. H Chisholm, W. Rhodes, N. W. Cayley, H. J. Carter, Mrs. E. Dark (New South Wales); and Mr. F. G. C. Tooke (South Africa). Visitors to the camp included Messrs. W. J. Enright and G. A. Smith (members of the R.A.O.U.), the Mayor of Dungog (Alderman Jones) and other residents of the district.



R.A.O.U. CAMP, WILLIAMS RIVER.
(Smoke ascending at right of picture).

Photo. by A. H. Chisholm.

NATIONAL MUSEUM OF MEDICINE

every record of the camp. But the jungle itself was not neglected. Excursions were made as far as the Chichester Valley, far along the road to the Tops, and in a score of places through the brush between the highway and the river—a narrow belt of vegetation, dense or easily traversed. We followed stony creeks, some dry, others with a slender flow of water. We returned to camp hot and dusty, but seldom without some rewards for our rambles : notes of things seen, photographs, or specimens—not birds nor eggs, happily, but insects, land shells, or plants.

Orchids, of nearly 20 species, were more or less abundant, and some of us were keen orchid hunters. We lacked a general botanist, however, and could become properly acquainted with but few of the jungle shrubs and trees. Ferns and orchids were identified by Mrs. Messmer, who made lists of the species. With six entomologists in camp, the insect fauna of the district was closely studied and collected ; and a number of new species will be described as a result of their researches.

Bird life on and near Barrington Tops has been dealt with already in *The Emu* (Vol. XXV, Pt. 2) ; we saw the birds of the foothills and lower slopes, dwellers in open forest and the jungle. All were familiar species ; for we failed to add to or discover the most desired, the Rufous Scrub-Bird (*Atrichornis rufescens*). The Superb Lyre-Bird we did see, as expected ; also the Regent-Bird and the Spine-tailed Logrunner. Two nest-mounds of the Brush-Turkey (*Alectura lathami*) were found, one being in use.

The first walk of the earliest arrivals in camp was marked by an unusual sight—*three* young Red-tailed Black Cockatoos (*Calyptorhynchus banksi*), evidently one brood, though two eggs form the clutch, never more with this species, says authority. The trio was closely observed, and the observers were satisfied that it was a brood they saw, and not an adult with young. Sometimes five Black Cockatoos were seen in company ; the writer had a distant view of them, and recorded " a family party "—probably the parents with the three young birds mentioned above.

Green Cat-Birds (*Ailuroedus crassirostris*) were not uncommon in the jungle. We heard their strange calls, and had glimpses of the birds themselves, among the branches of tall trees, in many places. A nest containing three day-old nestlings was found in the " bowl " of a big bird-nest fern. At a turn of the road, dipping across a creek, where the vegetation is dense, Cat-Birds were seen and heard every day. Several pairs had territory there, and were interviewed by all who went that way to Rocky Crossing, the most delightful spot on the river.

At Rocky Crossing the Williams is more turbulent than lower down stream, and the rock of its bed and its banks gives it wild, rugged beauty. There are falls, and narrow channels through water races, that flow swiftly but not noisily between high, steep walls of rock, tufted with ferns and mosses. Picnics at the Crossing were on the programme daily ; going there alone you would surely find company at the end of the jungle by-way that leads from the road to the river.

And there the best hauls of aquatic insect-life were made, including a new species of the genus *Dryopidæ*, tiny beetles that crawl on rocks in rushing water. Dragon-flies, one kind probably undescribed, were taken at the Crossing; also two fine stone-flies, and, in the spray of a miniature cascade the larvae of a curious dipterous fly.

Rose Robins (*Erythrodryas rosea*) were the daintiest small birds seen on the Williams. Several nests were located, one at a great height on a bough above the river at the ford. Mr. Chisholm stalked a Rose Robin family, and obtained photographs of parent birds with a fledgling : the reward of patient waiting. The White-browed Scrub-Wren (*Sericornis frontalis*) was nesting near camp; but this species was much less numerous than the Yellow-throated Scrub-Wren (*S. lathami*), more than 100 nests of the latter being noted, mostly along the river. Three nests were hanging in one bushy tree; another was pendant from a tree-fern frond. Some of these bird-homes were pretty enough, the work of skilled beak and claws; others were untidy, built in a hurry or carelessly. Nest material, curly, golden-tinted moss, was plentiful, draping bush and tree in the jungle; the aerial roots of orchids (*Sarcochilis* sp.), were entangled in it.

Few of us were constant bird-observers; for the river called, and the orchids lured us on their trail. But, resting by the river, or orchid-hunting, we never failed to heed bird-voices, nor to note the birds seen, and report them to our census-maker. One might loiter in the shade, or rest where the moss still was green, yet not be unprofitably idle, having eyes and ears alert for gleaning. The Rose Robins' nest by the river was discovered in indolence. A rare dragon-fly flashed before a weary entomologist and spurred him into activity. Younger members of our party went far afield, leaving camp after breakfast and returning at sundown, or later. Their exertion was not fruitless; our bird-list would be shorter had they been content with little excursions around Cutler's Pass Camp. But the longest day journey, out to the Chichester, made by Messrs. J. Ramsay and J. Bettington, failed to add the Scrub-Bird to the list, though that species does occur in the Chichester Valley.

The territory of a pair of Regent Bower-Birds (*Sericulus chrysocephalus*) was about half a mile from the camp. Their bower was uncompleted—a platform of sticks beneath a bush only a few yards off the roadway. The male bird was seen there occasionally, but no additions to the bower had been made when we left the Williams. The Rifle-Bird (*Ptiloris paradiseus*) was not seen, but its harsh call was heard near the Tops, at about 3,000 ft. The Checklist gives the range of this brilliant bird as Rockhampton to the Hunter River; and we had hoped to meet with at least several pairs on the Williams, where conditions are suited to its needs.

Though only Messrs. Ramsay and Bettington saw a Brush-Turkey—and that some miles from the Williams—the species is a bird of the Barrington Tops country. I met with it in January last, near the head waters of the Williams, and Mr. John Hopson has seen it frequently. Doubtless it still frequents the jungle on the lower slopes.

On the Tops and in the river valley the Lyre-Bird (*Menura novæ-hollandiæ*) occurs. Its notes were heard near our camp, and occasionally a Lyre-Bird was seen.

Camp life was uneventful; but the venture of a party to the Tops was marked by an accident that might have been serious indeed. Returning in darkness on a road made treacherous by rain, Mrs. Messmer was thrown from her horse, which lost footing in the mud. The animal plunged, as it lay partly on its rider; but the lady soothed and quietened it, and escaped with slight bruises. Presence of mind and a knowledge of horse nature saved her from serious injury.

Members of the party who spent a night in the old hut on the Tops suffered discomfort. The cold was intense, and only the fire was their friend—the fire and the hut walls that broke the bitter wind, though its roof failed to keep out the rain. Mist for hours hid the plateau in daytime. The excursion was hardly worth while. In fine weather a trip to the Tops may be delightful, though even in midsummer mist is lurking in the river gorges, ready to rise and flow over that upland world. In January two of us were mist-bound in the hut for hours, nearly every day. When the sun broke through, we looked upon a land alight with flowers, and murmurous with the hum of insects. Myriads of bees, dragon-flies and "skipper" butterflies enjoy a brief sunshine life, between the mists, on Barrington Tops in summer time.

A week on the Williams is a period too brief to enable even a score of naturalists to gain a general knowledge of the district's fauna. We had museum men among us, keen and tireless workers, and experienced field ornithologists. Still, our records give only glimpses of wild life in the forest and the sub-tropical brush. Doubtless, we missed some birds of special interest, though few, if any, in the neighbourhood of the camp can have escaped notice. A night voice from the hill slope behind the tents was heard; later the Nightjar was seen. The Scrub-Bird, one morning, was reported—identified by a call, not seen. Hope surged high, but fell again soon. The call was heard again, and the caller came into view—a Whip-Bird (*Psophodes olivaceus*), with unusual voice! The notes had deceived even one of the few hearers who were familiar with the *Atrichornis* call. But we keep a rare pleasure in store. At another camp-out, three or four years hence, we may hear *Atrichornis* call in a northern brush, and possibly see the small, elusive bird.

We end, therefore, on a note of slight disappointment ornithologically, at failing to meet the Rufous Scrub-Bird and one or two other brilliant birds that distinguish somewhat similar country at the border of N.S.W. and Queensland. But the natural history of the area generally was, and is, something to cherish—we have material and memories to "flash upon the inward eye" for many years. And not the least pleasant of these memories will be prompted by the hospitality of district residents. The Mayor of Dungog, the Barrington Tops Tourist League, and citizens of both town and district were all very kind. We were entertained on first reaching Dungog and also on our return to that pretty town, and at the camp itself we were favoured with fraternal visits by many residents of the district.

Birds Recorded near R.A.O.U. Camp, Upper Williams River, N.S.W.; October, 1926.

BY B. C. J. BETTINGTON, R.A.O.U., Merriwa, N.S.W.

EVERY day of the week spent on the Upper Williams River was full of interest. Not that we found anything remarkable—the gripping factor was "what might have been." In such brush, in such an area, it was reasonable to be expectant of meeting quite a number of distinguished birds. Who was to say that this was not the southern limit of several more-or-less tropical species?

Accordingly we were always on the *qui vive*; or rather, we were even more alert than bird-observers usually are in "new" country. If ornithologists, like school-boys, should "set the game beyond the prize," then was this an ideal trip! But it is not to be inferred that "prizes" were lacking. Including birds seen on the journey from Dungog, nearly 100 species were recorded for the week, more than 20 species were found breeding, and some (including the Rose Robin), were photographed. To several of our southern members most of these birds were new; and for those of us who had met the various species previously there were vouchsafed divers intimate glimpses of old friends in new guises. For instance, Mr. J. S. P. Ramsay and Mr. A. H. Chisholm, both of whom are familiar with jungle birds, did not find a single species new to them, but they were much struck with the performance of a Lyre-Bird that imitated the voice of a Brush-Turkey. Indeed, they took the bird to be a Turkey, but presently it swarmed to the top of a tall tree, and revealed itself as a female Lyre-Bird.

As a matter of course, *Menura* is the master of these jungles from the vocal viewpoint. But he has a bright little rival in another ground-loving bird of the dark places, the Yellow-throated Scrub-Wren—the Black-nest Bird of settlers. To hear a bevy of Yellow-throats singing at eventide is to acquire a precious memory; and there are times when these lively creatures brilliantly mimic the voices of other birds.*

Perhaps the most interesting species recorded—interesting on a distributional basis—were the Rifle-Bird, Regent-Bird, Southern Chowchilla (Spinetailed Log-runner) and Pale-yellow Robin. None of these species can now be found much further south than the brushes of the Hunter River tributaries, and it does not appear that the Rifle-Bird and Pale-yellow Robin have ever been recorded below this point.

One or two interesting questions touching distribution arise also in respect of birds that were *not* recorded. Does the Pilot-Bird not

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*Mr. E. Nubling and Mr. P. A. Gilbert, M's.R.A.O.U., of Sydney, report that in the N.S.W. National Park recently they heard four Yellow-throated Scrub-Wrens, in company, imitate the notes of 26 species of birds.—EDITOR.

THE CAMPING PARTY, WILLIAMS RIVER.

Photo. by A. Musgrave.

EDWARD'S HUT, BARRINGTON TOPS.

Photo. by Mrs. C. Coles.

extend this far north? It was neither seen nor heard. Are we to believe, then, that this unique bird finds its northern limit near Sydney? On the other hand, as the Pale-yellow Robin, which does not occur near Sydney, was seen on the Upper Williams, why did we not meet also such species as the Rufous Thrush and the Spectacled Flycatcher, which are by way of being associates of that Robin in the north? Some of us had expected also to encounter the Olive Whistler, that lover of damp jungles, particularly where beeches flourish. The beech (*Nothofagus Moorei*) country on the higher portions of the Macpherson Range, Queensland, has been shown to contain an Olive Whistler, and as beech trees are abundant on Barrington Tops* we thought the sweet-voiced bird might also be there. Perhaps it was, and is; but we neither saw nor heard it.

Then there is the non-appearance of *Atrichornis rufescens*, the Rufous Scrub-Bird, to be considered. This species having been taken by Messrs. Ramsay and Cayley at the head of the Chichester River, only a few miles away, some five years ago, it was regarded as almost "a certainty" in the Upper Williams brushes. But although several of us tramped many miles, and kept eyes and ears on the alert, we found no trace of the elusive little creature with the remarkable voice. Why? It has been recorded (*Emu*, Vol. XXI, p. 10) that *Atrichornis* called freely on the Macpherson Range in a dry year (1918), so it can scarcely be that the prevailing dryness of this Spring silenced the species in the Chichester or Williams River brushes. Is it likely that the increased traffic through this area since Barrington Tops began to attract tourists has driven away the shy *Atrichornis*?

Following is a list of the birds recorded during the camp. It does not include ten or twelve familiar species seen on the journey from Dungog to Cutler's Pass and back :—

Alectura lathami, Brush-Turkey.—One bird seen, and their scratchings were numerous. A nest containing 7 eggs was found, in which the eggs were placed at different depths and spaces, contrary to usual custom.

Lopholaimus antarcticus, Topknot Pigeon.—One or two seen in the tops of tall scrub trees.

Macropygia phasianella, Brown Pigeon.—Common. Seemed to be mating.

Geopelia placida, Peaceful Dove.—On the roads outside the scrub.

Chalcophaps chrysochlora, Green-winged Pigeon.—One or two birds seen.

Leucosarcia melanoleuca, Wonga Pigeon.—Fairly common.

Astur novæ-hollandiæ, Grey (White) Goshawk.—A grey bird was seen several times high above the scrub, and a pair of white birds were seen on the summit of a ridge.

Uroaëtus audax, Wedge-tailed Eagle.—One bird seen just outside the scrub area.

Haliastur sphenurus, Whistling Eagle.—A pair occasionally seen circling above the scrub.

Ninox boobook, Boobook Owl.—Heard calling regularly from the camp at night.

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*The beeches of Barrington Tops are said to be of the same species as those of the Macpherson Range, but they appeared to be different. Certainly they are less picturesque than those moss-bearded old trees of the south Queensland mountains.—EDITOR.

Calyptorhynchus banksi, Red-tailed Black Cockatoo.—Seven birds were observed feeding on *Casuarina* seeds in the open forest on the edge of the scrub. They were usually in three parties of a three and two pairs, but always close together and fairly tame. Though often feeding in trees not more than 30 feet high, they would take no notice of observers underneath, but continue feeding, occasionally emitting a single plaintive note. Their habits and different colourations caused a friendly but quite inconclusive argument between two members of the party about the ages of the birds.

Kakatoë galerita, White Cockatoo.—Heard and seen in the scrub, but not common.

Aprosmictus scapularis, King Parrot.—Rare.

Platycercus elegans, Crimson Rosella.—Common throughout the scrubs, and their musical notes were almost constantly to be heard near the camp. One pair was observed feeding young, and another was apparently looking for a nesting hollow.

Podargus strigoides, Tawny Frogmouth.—Heard calling at night.

Eurystomus orientalis, Dollar-Bird.—Rare.

Alcyone azurea, Azure Kingfisher.—A bird was often seen on the river at the camp watering-place—generally a flash of blue and rich brown, and no more.

Dacelo gigas, Laughing Kookaburra.—Common in and outside the scrub.

Halcyon sanctus, Sacred Kingfisher.—Heard and seen feeding young.

Eurostopodus mystacalis, White-throated Nightjar.—One bird flushed from a hill-side and they were several times heard calling at night.*

Cacomantus pyrrhophamus, Brush Cuckoo.—Frequently seen and heard.

Chalcites basalis, Narrow-billed Bronze-Cuckoo.—Heard only.

Lamprococcyx plagosus.—Golden Bronze-Cuckoo.—Heard outside the scrub.

Menura novæ-hollandiæ, Superb Lyre-Bird.—Moderately abundant. Seen on several occasions, and almost wherever one went in the scrub a Lyre-Bird could be heard giving a vocal entertainment.

Hirundo neoxena, Welcome Swallow.—Seen on the cleared flats just outside the brush.

Hylochelidon nigricans, Tree-Martin.—Seen breeding by the party that visited Barrington Tops.

Hylochelidon ariel, Fairy-Martin.—Also seen in numbers on the Tops.

Rhipidura flabellifera, Grey Fantail.—Very common ; several nests observed in process of construction.

Rhipidura rufifrons, Rufous Fantail.—Common in the scrubs, particularly in the gullies leading down to the main stream. These birds could generally be called up close to an observer by making a squeaking noise with the lips. On such occasions they became excited and made a very pretty sight.

Rhipidura leucophrys, Wagtail.—An occasional bird near the edge of the forest country.

Myiagra rubecula, Leaden Flycatcher.—In the forest country around the camp there were two or three pairs, and one was observed with a nearly completed nest.

Monarcha melanopsis, Black-faced Flycatcher.—Common throughout the scrubs, and a number of nests were observed, but none that had reached the stage of eggs.

Microeca fascinans, Jacky Winter.—In the forest country around the camp.

Petroica multicolor, Scarlet Robin.—Two pairs were in the forest country, and the female of one was seen sitting on a nest high up in a *Casuarina*.

Petroica phoenicea, Flame Robin.—Fairly plentiful on Barrington Tops.

Petroica rosea, Rose Robin.—These beautiful little birds were very common in the thick scrub, and were a source of delight wherever met with. Two

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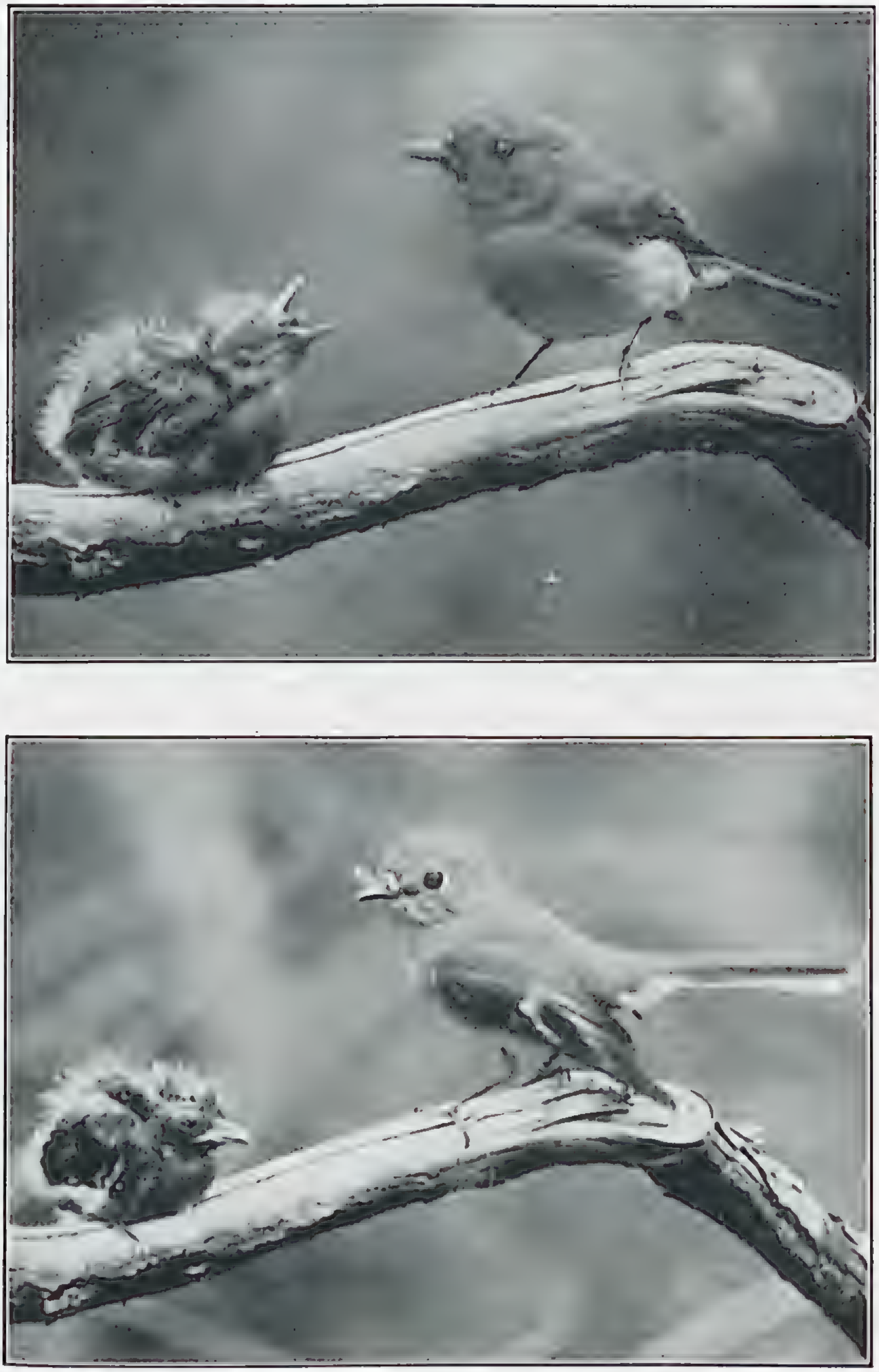
*The call of this fine Nightjar is singularly animated. It is sometimes termed the Laughing Owl.—EDITOR.



ROSE ROBIN AND YOUNG, WILLIAMS RIVER. (Above, female; below, male.)

Photos. by A. H. Chisholm.

nests were observed, one under construction, and the other with young, and both high up; a pair were also seen feeding a fully-fledged young bird.

Eopsaltria australis, Southern Yellow Robin.—Common through the scrubs, and several nests, mostly containing 2 eggs, were discovered.

Eopsaltria capito, Pale-yellow Robin.—The presence of this bird was suspected on more than one occasion, but only a pair was definitely recorded—and that not far from the camp, by Mr. Chisholm, who knew the bird well in Queensland.

Pachycephala pectoralis, Golden Whistler.—Very common, and a fine songster; was not observed breeding.

Pachycephala rufiventris, Rufous Whistler.—The characteristic call of "Ee-chong" was frequently heard in the forest.

Colluricincla harmonica, Grey Shrike-Thrush.—Common everywhere, and as a songster was supreme. One nest was found, about 20 ft. up in a staghorn fern.

Falcunculus frontatus, Eastern Shrike-Tit.—Fairly common in the scrubs.

Psophodes olivaceus, Eastern Whip-Bird.—Numerous and noisy throughout the scrub. One bird had a peculiar voice which sounded like some other species mimicking a Whip-Bird. This bird also imitated the scolding note of the *Orthonyx*.

Coracina novæ-hollandiæ, Black-faced Cuckoo-Shrike.—Seen in the tall eucalypts on the ridges above the scrub.

Edoliisoma tenuirostre, Cicada-Bird.*—Like the preceding species, was chiefly heard amongst the eucalypts on the ridges. Its strange, continuous "chirping" attracted much attention.

Orthonyx temmincki, Southern Chowchilla.—Fairly numerous in the darkest parts of the scrub, but did not appear to be breeding.

Oreocincla lunulata, Ground-Thrush.—Also seen only in the dark and shady parts of the scrub.

Gerygone olivacea, White-throated Warbler.—Not common; a few heard in the forest country.

Gerygone richmondi, Brown Warbler.—Common in the scrub. Two nests under construction were observed.

Acanthiza lineata, Striated Thornbill.—Seen in the scrub.

Acanthiza nana, Little Thornbill.—One specimen seen.

Acanthiza pusilla, Brown Thornbill.—Fairly common, both in scrub and forest.

Acanthiza uropygialis, Buff-tailed Thornbill.—A pair seen in the forest country.

Acanthiza chrysorrhoa, Yellow-tailed Thornbill.—On the edge of the cleared country, outside the forest.

Sericornis frontalis, White-browed Scrub-Wren.—Common both in scrub and forest, and could easily be called up with any thin, squeaking noise. Several nests were found, one containing 3 eggs which received too much attention from the curious and was deserted. Another nest contained a young Cuckoo, which was not old enough to indicate the species to which it belonged.

Sericornis lathami, Yellow-throated Scrub-Wren.—Common throughout the scrubs, which were literally festooned with the large, hanging nests, some new, but mostly old. A few contained eggs, but most of those in use seemed to be only in course of construction. This bird is a brilliant vocalist.

Sericornis magnirostris, Large-billed Scrub-Wren.—Not so numerous as the two preceding species, but generally distributed through the scrub. One nest was found with 3 eggs. Though the birds and eggs are so much smaller than

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*Cicada-Bird, as used by Mr. Bettington, seems to be an improvement on "Jardine Caterpillar-eater." In Queensland this species is sometimes termed the Cricket-Bird. Both names, of course, refer to its curious note.—EDITOR.

S. lathami, the nests are almost exactly similar in size and construction; in fact, this bird probably almost invariably uses deserted nests of the larger species.

Malurus cyaneus, Superb Blue-Wren.—A pair had a nest containing 3 young birds in the partially cleared country near the camp. Placed at the top of a tussock of grass, it afforded an ideal subject for photography, and was freely used for that prupose.

Artamus superciliosus, White-browed Wood-Swallow.—Seen in the open country just outside the forest.

Artamus cyanopterus, Dusky Wood-Swallow.—Seen on Barrington Tops.

Climacteris picumnus, Brown Tree-Creeper.—Seen in the open country only.

Climacteris leucophaea, White-throated Tree-Creeper.—Common and noisy in forest and scrub.

Climacteris erythrops, Red-browed Tree-Creeper.—Fairly common; seemed to favour the higher ground.

Dicaeum hirundinaceum, Mistletoe-Bird.—One or two seen in the forest.

Pardalotus punctatus, Spotted Pardalote.—Two pairs seen, one of which was building—carrying grass into a hole burrowed into the side of a steep hill.

Pardalotus ornatus, Red-tipped Pardalote.—One bird seen in the forest country.

Melithreptus lunatus, White-naped Honeyeater.—A few birds only were seen, but the species were probably fairly common in the tops of the tall trees.

Myzomela sanguinolenta, Scarlet Honeyeater.—Heard and seen on several occasions.

Acanthorhynchus tenuirostris, Eastern Spinebill.—Fairly common.

Meliphaga lewini, Lewin Honeyeater.—Very common and noisy throughout the scrubs.

Meliphaga chrysops, Yellow-faced Honeyeater.—Common in the forest country.

Anthus australis, Pipit.—In the cleared country outside the scrubs.

Aegintha temporalis, Red-browed Finch.—Common in the forest country, where it was breeding. Usually in small mobs of 10 or 12 birds.

Ailuroedus crassirostris, Green Cat-Bird.—Common, and its extraordinary note could generally be heard in any part of the scrub. Two nests were found, one containing 2 young and the other 2 eggs.

Ptilonorhynchus violaceus, Satin Bower-Bird.—Common in most parts of the scrub. Two males in full plumage were seen, also a number of the green birds.

Sericulus chrysocephalus, Regent Bower-Bird.—Not common, but several birds were seen, including two fine males, one of which rose from a playground, a few short sticks lying on some bare ground under fallen bushes, with no attempt at "uprights."

Ptiloris paradiseus, Paradise Rifle-Bird.—It was another disappointment that this bird was not met with more frequently. Messrs. Ramsay and Chisholm heard one call twice on their way to the Tops—at the edge of the scrub and some 4 miles from the camp—but this was the only occurrence noted.

Corvus coronoides, Australian Raven.—There were several friendly arguments in the camp on the "Crow question." The local birds, though none was handled, were unanimously voted to be the Raven by those acquainted with the calls of both birds. One was seen flying up the river daily. It probably had a nest.

Strepera graculina, Pied Currawong.—Very common in both scrub and forest, sometimes gathering into fairly large mobs, which made a great noise.

Cracticus nigrogularis, Pied Butcher-Bird.—Seen on the outskirts of the forest. Locally known as the Organ-Bird.

Cracticus torquatus, Grey Butcher-Bird.—Common in the forest and particularly the tall trees on the ridges. These birds had singularly musical notes, and appeared to be imitating, with some success, the song of the preceding species; in fact, they were several times mistaken for it, until tracked down and actually seen.

Gymnorhina tibicen, Black-backed Magpie.—Seen on the Barrington Tops.

JUNGLE PATH, NEAR THE WILLIAMS RIVER.

Photo. by A. Musgrave.

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R.A.O.U. Branches and the Future.

BY A. G. CAMPBELL, R.A.O.U., KILSYTH, Victoria.

(Read at the Sydney Congress, 1926).

AS sponsor for the motion at last Congress (*Emu*, Vol. XXV, p. 149), I have ventured to give the matter a little amplification. The motion was a recommendation to Council to consider and prepare a scheme for closer co-operation between the State members with a view to strengthening the Union in all its activities. At a subsequent conversazione (May 5) the idea was carried a step further, and that meeting expressed itself of opinion " that Council should invite applications for the formation of branch committees under Article 26 in any part of Australia, such to briefly outline their proposals ; also, that this matter be given a prominent place in the business of next Congress."

I make no apology for mentioning State members in the original motion. This is not parochialism but a sound statement of fact, since Australia is actually constituted or composed of States, each with certain rights and duties within its own borders, but together a union or federation, which governs and guides the whole without interfering with what might be termed the domestic privileges of each unit. Carry this idea in mind while we consider the growth and possibilities of the R.A.O.U.

The Union, though founded in one small State, has built up a substantial membership in all States. When we note that in the Commonwealth there are no less than 442 members and overseas another 51 members, we must conclude that the Union fills a peculiar want in the community, perhaps more readily implied than expressed, and has come to stay. Mutual interest, therefore, under the care of an excellent foster-mother, *The Emu*, has steadily developed the R.A.O.U. through its youth and its teens to full estate. This growth may have been much like that of a colt in a paddock, well fed and well found, an exercise run here and there, but always having someone in the background to ensure its being well cared for. Mark well, all this work of guiding the Union has been done by its officers in an honorary capacity. The instinct of selfless service for the good of the whole has been nowhere more in evidence than among the councillors of the R.A.O.U. Nor must we forget the munificence of certain members, who on special occasions have given tangible evidence of their belief in the power of the Union's ideals.

So far, good! Now, what of the future? With the experience of the past behind us, what can we formulate to build upon this foundation, so well and truly laid? We have come to cross-roads. We cannot go back ; we cannot stand still ; we must go forward.

The R.A.O.U. charter, as we all know, is very complete (except perhaps in the matter of junior members). The Union is a corporate body, registered under the Companies Act, Victoria, as a non-profit company that is non-profit in terms of cash such as ordinary trading companies require. But there is absolutely no limit put upon the profits that may accrue to members in the way of entertainment and education in their special subject. The Memorandum and Articles of Association will repay close perusal, if only to grasp the wide and comprehensive manner in which the future of the Union is provided for.

For 24 years the authority of the Council has been wholly situated in Melbourne, with no direct encouragement of State activities. Such authority has built up the strongest membership numerically in one of the smallest States. This authority, therefore, cannot be otherwise than beneficial. Why not try a transplantation, at least a subdivision and propagation of this authority? There is no power given to use Melbourne wholely and exclusively except as "a federal centre of operations." The Union may "promote and establish branch associations," and (as stated in Article 26) "Council may appoint any additional secretaries . . . . . or other officers for special duties, and in particular may appoint local secretaries, committees, or representatives in all or any of the States of the Commonwealth of Australia . . . . . or in any district . . . . . and may delegate to them such powers, authorities and discretions as such Council possesses."

In developing a private commercial business or company, there are at least two main lines of action. A commercial house will be established in one town or centre, often as the effort of one man, and after a while branches are established in other parts. These branches, weak at first, are fed, financed, and supported wholly from the main centre, until in time they are strong enough to show a profit for themselves. Another method is co-operative. A number of small businesses, having similar interests, struggle along for a while in watertight compartments, until finally, often from hardship and force of circumstances, they combine and form one central clearing-house. This is particularly true of rural production. Thenceforth their success is assured. The units or branches flourish in their various districts, and the union is there not only to direct them as required but to handle their products. Some astonishing results, even in Australia, have accrued to this form of organisation, and perhaps the most remarkable thing about these organisations is that while company profits are assured, the greatest profits of all accrue to individual members themselves in increased returns for their products, an indirect result of the overall co-operative movement. If the first method has been a success in the business world, the second has been still more so.

Apply these two ideas to the functioning of the R.A.O.U. Firstly: By means of a special fund, *not yet in existence*, or by an increase in membership fees, Council might set out on a campaign for obtaining new members by bringing prominently before the public the aims and objects and benefits of the Union. Council would require to distribute its energies over all the States, and, of course, would require much local assistance from members in any centre of operations, which no doubt would be freely given. Increase of membership would no doubt result, but still the goal—the propagation of the Union's ideals—might not be any nearer. Much spade-work would still be required to carry out the Union's objects. For instance, if an urgent matter crops up at any point, such as the desecration of a sanctuary or infringement of export regulations, who is to act? There certainly may be the local secretary or State members of Council, but the best they could do is to refer the matter to Council. However promptly they acted, this would still be a somewhat roundabout and time-losing procedure.

The second method is the co-operative method, where every part is co-ordinated and functioning in its own particular way. Successful co-operation in business consists of well-formed, active units, one in each district, each of which is primarily self-governing and self-supporting. Members of the unit know their own particular business and their own district best, and they become self-reliant feeders of the main centre of such things as they produce.

Let members in any city or district, where they feel so inclined, form themselves into a local or branch committee, receive an appointment from Council under Article 26, and exercise such powers, authorities, and discretions as the Union possesses. Five members would not be too small a number to form a unit—certainly not too small a number to meet how and when they pleased in order to chat over and discuss affairs of mutual interest, not to mention work in the field. The idea would rapidly grow into an interchange between units of adjoining districts, quite apart from the annual session. Finally, the more important matters of general interest would be sifted out and automatically brought forward to the central Council.

The question of finance would then be a matter entirely for the unit to decide and control. Members of the Union in any case would be called upon to pay for any new scheme, whether by the first or the second method. The co-operative unit way, therefore, will be the more direct and less expensive method. Another guinea per annum from each member to his own unit would provide a local fund for domestic purposes, over which the unit would have sole control. Membership of the Union, including subscription to *The Emu*, would remain as before.

There are many objects of the Union which might well be relegated to units or small groups of individual members. To promote the study and knowledge of ornithology (among members), to arrange for collective field work or special outings, and to establish and maintain scientific collections, laboratories and other aids, accessories and conveniences (among members)—these are matters for branches. The added interest of observations and research in their own particular district would bring forth results not yet dreamed of.

For Council there are federal matters to attend to, *viz.*: publish *The Emu* and any other Bulletins required; to act as a clearing-house for all the matter coming forward from units and members; to undertake the means necessary for the information, entertainment, demonstration, education, convenience and use of members; to take all means that may be considered most effective to preserve and protect the avi-fauna indigenous to the Australian region, etc.

It should be obvious that we are faced with natural growth in the Union. (Even talk of breakaway is a sort of growing pain and a sign of growth.) Is Council to endeavour to control members 500 or 1,000 miles away, and keep in touch with them only through *The Emu* and occasional circulars and notices? It does not seem practicable when members increase in numbers. It might be assumed that the limit of practicability has now been reached. What, for instance, can Council understand about the requirements of members in Boomoonoomanah or Bondi, Coomooboolaroo or Cowlong? I contend there are many matters not Council business which properly should be dealt with by units; and if Council did attempt to grapple too much with local matters it would be to the neglect of federal aspects of the Union.

The matter of junior members has been mentioned. No provision is made in the Articles, for the simple reason that juniors as such cannot be recognised. There is nothing, however, to prevent units doing what they wish to attract junior members. Here they could give the personal touch that is so much needed. Every member must, of course, recognise the value of any scheme that will attract and educate the young folk, who will in due course become members of the Union.

Finally, it may be asserted that some such scheme as here outlined, the principal aims of which are to bind in common interest the members of the Union in the town or district where they live, must confer great and lasting benefits upon the affairs of the R.A.O.U. as a whole.

Unusual Nesting Sites.—One expects usually to find the warmly-lined and cosy nest of the Yellow-tailed Thornbill (*A. chrysorrhoa*) in a cluster of pendulous leaves and twigs and skillfully hidden from observation.

To my surprise, when visiting the top of Mount Dandenong (Victoria) I found a nest of this charming wee bird built in a small hole in the ground in the side of a bank on the roadway. The only part of the nest that was visible was the small opening of the entrance. The nest contained young, and the parents were quite unconcerned at my presence and were easily identified.

It is customary for the Laughing Kookaburra (*Dacelo gigas*) to select a hollow in a tree wherein to lay its eggs; but a pair of these entertaining birds chose a hollowed-out ledge on the cliff-face of a deserted quarry at Spring Vale, Victoria. They reared their brood in safety.—A. H. Mattingley, Melbourne (12/11/26).

The New "Official Checklist of the Birds of Australia."

BY J. BURTON CLELAND, M.D., R.A.O.U., Professor of Pathology in the University of Adelaide.

IN January, 1913, the R.A.O.U. published, as a Supplement to *The Emu*, an "Official Checklist of the Birds of Australia." Though involving much careful work, this consisted essentially of a list of the birds considered fully entitled to specific rank, with references to Gould's works, to Mathews' *Birds of Australia* (as far as then published), and when necessary to other authorities. The distribution of each species was broadly indicated. The Checklist Committee recognised 751 valid species.

In the same year Gregory M. Mathews published *A List of the Birds of Australia*. In this work the author listed 652 species, and included also the sub-specific forms at that time named, giving full references to the original descriptions of both the type species and the various sub-species. The range was more closely defined and many type localities were given.

Since these two lists were compiled much water has flowed past the mill. The stream has not been a tranquil one, for its waters have been stirred to their depths by controversy and have foamed with the whirlpools of divided opinions. As yet, it is too early to decide how much must be debited to froth and foam and how much is a well of pure water undefiled by ephemeral human opinion. But the waters, however turbid, have served a very definite purpose, and there is no doubt that we owe much to Gregory Mathews, who was in great part responsible for troubling them.

Our early forefathers, as exemplified in Genesis, gave names to objects, animate and inanimate. It was an early human attribute. With a name, the object considered emerged more clearly from its fellows. Bacon says a crowd is not company and faces are but a gallery of pictures, and talk but a tinkling cymbal where there is no love. But affection bestows names on its fellows; we rejoice in the company of those we know and the bonds of consanguinity draw us closer together. Even so is it with birds. To those who know them not by name, they are but a crowd, their singing barely more than a tinkling cymbal. To those who know them by name, be it vernacular or technical, each species becomes a definite entity, its habits and behaviour are more clearly recognised, its song has an individuality.

The fondest lover may even go further and distinguish an individual bird of a species by its caution or trustfulness or peculiarity in constructing the nest or richness in song. When the bird-lover journeys into a distant locality, he may become aware of differences in colour-markings, in size, in habits, and in song of the species of birds in the new environment. Some are the same and yet not the same. Are the differences merely those of brothers and sisters or cousins ; are the new birds possessed still of the same surname ; or is the relationship more that of a Scotch cousin, a family likeness it is true but with other blood coursing through the veins as well ? By what name are they called, for perchance the name may betray the genealogy ? Did a Scotchman go to Ireland generations back ? Perchance his descendants may still retain a Mac. The aim of our bird nomenclature should be to confer a name, equivalent to surname, on the brothers and sisters and first cousins, all whom we can recognise as having essentially the same somatic appearance, personality and habits, making due allowance for individual variation which, according to the species, may be negligible or occasionally relatively considerable.

We must not forget that some members of the family may have travelled comsiderably, that some units may have been marooned, and that in some cases long periods of time may have separated branches of the family without having led to any tangible alteration in either group as a whole—some species mutate with ease and some are literally hide-bound. Our nomenclature, then, must endeavour to show as clearly as possible blood-relationship. If we carry our inquisitorial inspection too far, we may lose the perspective. If we look deeply enough, no two individuals can be the same in all characteristics. Our specific definitions must not be drawn from individuals passed through too fine a mesh. And here is a noteworthy point. In the case of two closely-allied species, each will differ from the other not in one point only but in many. We know now that biologically each cell of an individual of the one species is essenrially different—different in the make-up of the original germ-plasm—from each cell of a member of the other species, and in the total make-up these differences show themselves in various places ; it may be in size, in thickness of bill, in some colour mark, in the making of the nest and in the egg.

True species differ then from each other always in more than one particular, and these particulars are adhered to. Can this criterion be applied to sub-species ? The answer is probably it can, but the differences are slighter ; the mutation in the germ plasm giving rise to them has been less of a saltation, and it may be that we can only put our finger on one tangible, clearly recognisable and constant, through slight, feature by which one sub-species can be distinguished from its near relative. Other features, though present, may be indetectable to our senses, cryptic as far as we are concerned. A sub-specific differences must be constant, must be innate. The action of environment on individual members, poverty of food supply, and so on, cannot be allowed to enter into the question. It is only when such factors have led to an alteration in the germ-plasm that we can entertain a sub-specific difference. A tangible and *describable* hereditary difference is essential for the establishment of a sub-species.

Though so easy to state, difficulties arise at once when we come to a species which extends over a vast extent of territory, and in which it seems clear that the individuals at one extreme end are obviously less closely related, as generations go, to those at the other extreme end than to those in neighbouring parts. There may be slight differences between the extremes, with all intermediate degrees between. The slight mutations that have arisen have by miscegenation, as is the case with Europeans and negroes, given rise to all kinds of intermediate stages. Here it may be possible to recognise sub-specific forms at the extremes, with constant differences, and to hyphenate the intermediate forms. But this is a cumbersome proceeding, and for practical purposes it seems better to treat the individuals as a whole, giving the range of variation.

So much for subspecies. In genera, we want again to show family resemblance. We want to keep together, under one name, blood relations. We should endeavour to place together as many blood-relations as we can, provided the number so associated does not become cumbersome. On the other hand, we do not desire so to associate those species which show some obtrusive and important feature not manifested by their fellow species. The occurrence of such must cause us, reluctantly perhaps, to use another generic name, by which the blood relationship is often lost, and rely on showing the relationship only by placing the genus in the same family.

I have endeavoured—and perhaps laboured unduly—to indicate what to my mind should constitute a species, and what a sub-species, and what degree of difference in species should nevertheless still retain them in the same genus. I feel that in the interests of ornithology we should be conservative in genera-splitting, definite and concise in species determination, and tangible in the separation of sub-species.

Since the last two lists of Australian birds were published, many sub-species have been named and genera have been split. Our nomenclature has been subjected to the ruthless but necessary law of priority. The latter is academic. The former deals with the science of ornithology. Are all these sub-species justified? Is the genera-splitting in the interests of clear vision? Who yet can say? But this we do know: Discussion has re-awakened keen interest. Our eyes have been opened more widely to the birds around us. We have studied them more closely, observed their habits more carefully, noted their range more explicitly. We have compared more, collaborated more, thought more, and watched more. The waters have not been troubled in vain. We were a sick man, though we knew it not. May we rise from the pool healthy, clear-sighted, vigorous.

In considering the work laid before us in the new Official Check-list, I would like to express admiration at the thoroughness and care with which this has been done, and my appreciation of the value of the contents. The Committee have endeavoured to supply as much information as possible, covering as wide a field as was practicable, and at the same time have felt it necessary, on the score of the cost of printing, to reduce the actual printing matter into as small a volume as was feasible. Many abbreviations had therefore to be introduced, but these are soon learnt on consulting the contents and do not give rise to any serious inconvenience.

The Committee recognise 707 species, a figure almost exactly midway between the 751 of the first Official Checklist and the 652 of Mathews' List. This seems a reasonable attitude, and it is doubtful whether the opinions thus expressed will be altered in the future to any appreciable extent as the balanced views of the majority of Australian ornithologists. This means that a species, recognised by the Committee, may be taken as being justly entitled to this dignity, whereas a form not so listed must be looked upon as manifesting merely a minor difference from the type, a form whose relationship is more clearly shown by a trinomial appellation than by individual specific rank.

Though the classification adopted in the Checklist does not descend below specific rank, the Committee have not overlooked the importance of sub-specific differentiation. They have, however, wisely, not assumed, at this stage of our knowledge of the birds of Australia, any responsibility for the recognition of any particular sub-species. The difficulty has been ingeniously overcome in the following way :—Under each species appears, in chronological order and preceded by small letters in alphabetical sequence, the various names which have been applied from time to time to the species in question. References are given to the authorities for these names. Thus we find listed, and in a form available for ready reference to those who appreciate their value, the various sub-specific names which have been applied. These trinomials receive neither endorsement nor negation by the Committee. They are here presented on the authorities of their authors alone, and must stand or fall in the future as they are found justified or otherwise.

Stress should be laid on the care that has been exercised—I know it by enquiries which from time to time reached me—in making the references accurate, and on the tedious nature of such work of compilation. The Committee have adopted, again it seems wisely, a broad view of the extent of individual genera. Their attitude is neither that of the lumper nor the splitter, and it helps to show more closely the relationships of species to each other. Nevertheless, genus-splitting in reason has definite advantages, and it has been possible to express Mr. Gregory Mathews' views on this aspect by including in brackets, and in a different type, names which the majority of the Committee evidently considered of sub-generic rank.

The Appendix by Mr. H. Wolstenholme is a new and useful departure. This deals with the various ways in which the scientific names of birds, both generic and specific, have been coined, and then passes on to notes on the names of Australian species, a Vocabulary, an Index of Proper Names with their origins, and a list of Suggested Pronunciations. This interesting addition should be cordially welcomed.

In conclusion, I would like to congratulate the Committee on the able way in which they have carried out this work, to thank them for the prodigious labour involved in the undertaking, and to express hearty appreciation of the result. If, as probably will be the case, the present Official Checklist serves more than one generation of Australian ornithologists without requiring substantial revision, then their labours will have received a fitting reward and their thoroughness a fuller recognition.

Some Critical Remarks on Prions *(Pachyptila).*

BY A. J. & A. G. CAMPBELL, Melbourne.

FOR the *Australian Bird Biographies* (Angus & Robertson, Sydney), and to aid the Checklist of the R.A.O.U., we endeavoured to find a key to the species of the intricate family of Prions.

With the assistance of the inter-state Museum collections (including that of Mr. H. L. White) kindly placed at our disposal, all available material (about 100 specimens) has been carefully examined. The result appears to be three definite groups with the following average measurements in millimetres :—

Name.	Width of Bill.	Length of Bill.	Per cent. of Width to Length.	Wing.
P. desolata	10.7	23	46	176
P. banksi	14.5	27.7	52	189
P. vittata	20.8	34.7	60	205

The width of bill is stated by Godman* to show a connection practically complete between one species and another ; while Buller† says " a regular sequence can be formed from *P. vittatus* to *P. ariel.*"

A tally of all the Australasian material indicates that in respect to width of bill there are two main foci, namely, from 10 to 11 mm. and from 13 to 15 mm. More than half the specimens are therefore within a millimetre of the average for the species, and variation above or below is comparatively uncommon—certainly not in "regular sequence." Further, the individual variations cannot be said to link one species with another, because, even if omitted from the table, they do not materially affect the averages.

If we admit that species in nature are produced by variations, then we must expect some such variations from the normal average.

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*" Monograph of the Petrels," p. 285.

†Buller : " Birds of New Zealand," p. 201.

G. M. Mathews, who gives an exhaustive history of the Prions in *Birds of Australia*, Vol. II, sets down an ingenious theory (p. 220) that each species, or sub-species, has been developed in its own particular island. That Prions do occasionally keep together in clans is illustrated by the fact that in June, 1926, twelve specimens* were obtained on Cottlesloe Beach, W.A., thrown up dead after a storm. The width of bill is from 15 to 18 mm., average 16 mm. After another storm in October following, dead birds were again found at Cottlesloe and some at Bunbury. Twelve specimens (an equal number of each sex) measure 12 to 13 mm. in width of bill and are obviously from a different colony. We consider the first batch is a large-billed race of *banksi*† and the second a small-billed race of the same species. The averages for the two batches are : Width of bill, 14.3 mm. ; length of bill, 28.9 mm. ; wing 188.4 mm. These measurements are not included in the above key, because the specimens came to hand later.

Between the sexes there is not any appreciable difference in measurements.

Bush-Lark as Mimic.—On 15 August, 1926, the first Bush-Lark was heard singing in this district. The range of bird calls imitated was limited and not until about six weeks later was a full range heard. In the course of the singing, notes of the following birds were recorded though not in the order named :—Pipit, Welcome Swallow, Singing Honeyeater, Dusky Wood-Swallow, Stubble Quail, Red-capped Dotterel, Willie Wagtail, Yellow-rumped Thornbill, Magpie-Lark, Red-backed Parrot, and House Sparrow. Several bird-calls were heard which I could not identify.

It would be very interesting to have notes on this wonderful singer from other localities. I presume it is a mimic, for I have now heard a few notes of the House Sparrow in its song, and last year, I was certain it imitated a few notes of the English Starling.

The full notes of each species mentioned above were not given, but a very easily recognised part of some of them was quite sufficient to give me the pleasure of writing this article.—HARRY H. NEWELL, Hindmarsh Island, South Australia (6/11/26).

[Mimicry of other bird-calls on the part of the Bush-Lark is recorded by Mr. C. F. Belcher in his book, *Birds of the Geelong District, Victoria* (1914). It now seems probable that Australia possesses more " mocking-birds " than any other country.—EDITOR.]

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*In the " H. L. White Coll." National Museum, Melbourne, and referred to by F. L. Whitlock, in this issue, p. 154.

†Referred to by Mathews as *P. vittatus missus*—" Birds of Australia," II, p. 212.

Birds and Prickly Pear.*

THE following notes are extracted from the report of the Prickly Pear Land Commission, Queensland, for the year ending June 30, 1926:

In our first annual report we said that the Emu and Crow were amongst the chief agencies by which pear seed is spread, and that the Commission would shortly frame a scheme for the destruction of these birds in the pear-belt. That scheme has since been framed and is now in operation. It is receiving general and widespread support, and it is claimed by landholders that it is helping them considerably in checking fresh pear infestation. The co-operation of shire councillors and the officers of the councils in this matter has been extremely helpful and is much appreciated.

We realise, however, that there are some people in the community who are loth to do anything to interfere with the working of nature, even if they do acknowledge that prickly-pear must be destroyed. This destruction in itself must, of course, involve an interference with nature. But much more important considerations are involved in the fact that the few who decry the destruction of bird life have the support of eminent scientific authority. Perhaps the following extract from the "Outline of Science" puts the case for the bird-lovers in the most forcible way:—

> "It is not possible to make precise calculations, but some experts have said that six to ten years without birds would suffice to bring our whole system of animate nature to an inglorious end: a vast hecatomb of insects—devouring and smothering one another. This is the biological reason for opposing the destruction of insect-eating birds except under careful scrutiny."

Although the commission's scheme has been generally and widely endorsed we think it advisable to place on record the reasons that compelled us to embark on a campaign of destruction.

The Royal Commission on Prickly Pear under the chairmanship of Professor B. D. Steele, D.Sc., F.R.S., which was appointed in 1923, gave close attention to this subject, from both practical and scientific standpoints. As might have been expected, that body was exceedingly reluctant to make any recommendation encompassing the destruction of bird life, but was compelled to do so by the force of events. Almost pathetic was the plea of many settlers that either the birds or the settlers themselves must go. "What is the use of my clearing pear when for every plant destroyed half a dozen more are sown by the Crows and Emus?" was the logic of these struggling men. And, pointing to paddocks that had recently been cleared, they would show under the green trees crops of seedlings from the droppings of birds coming up not unlike a miniature wheat-field. A widespread distribution of seed by Emus was also clearly in evidence. So in presenting its report the Royal Commission, after fully considering scientific authorities, as well as the actual experience of the day, wrote the following :—

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*For discussion on this subject at R.A.O.U. Congress see p. 165.

> " *Minimising the Broadcasting of Seed.*—All the evidence conclusively indicates two chief causes of the spread of pear.
>
> One of these is the action of floods, and running waters generally, in washing pear seeds or detached segments on to non-infested country ; the other is the habit acquired by birds and animals of eating the fruit of the pear and subsequently depositing the undigested seed broadcast.
>
> The first of these causes is largely beyond human control.
>
> In regard to the other cause mentioned, the chief distributing agents among birds are the Emu, the Crow, and the Scrub-Magpie. This fact is generally admitted.
>
> The chief distributors among animals are pear-eating cattle. This is not so generally recognised by landholders, and, therefore, we have deemed it advisable to briefly set out in Appendix 8 a statement of facts which justify this conclusion.
>
> As conditions vary considerably in different districts throughout the pear belts, it is inadvisable that we should submit definite recommendations for the destruction of birds or controlling the movements of stock.
>
> We think, however, that there are many districts in which early and effective steps might well be taken for the destruction of certain birds in order to minimise the spread of pear. The Pear Commission (to be appointed) should define these districts and frame the administrative rules necessary for carrying out the work.
>
> In regard to cattle, all landholders must be induced to realise that stock should not be permitted to graze over non-infested areas immediately after leaving infested country. Whether it will be necessary or practicable to go beyond this, by quarantining pear-eating cattle when passing from infested to non-infested districts, is a matter for careful consideration by the Pear Commission after the new scheme of administration has been some time in force."

The duty of taking action subsequently devolved on the present Commission. It was not a pleasant duty, but, nevertheless, was one that could not be shirked, and it took a period of about eighteen months of patient investigation before a definite decision was reached.

The danger of upsetting the balance of nature ; the good work that is done by insectivorous birds ; the almost miracle-like work that birds have done at times in other countries ; the bad results that have often followed the indiscriminate slaughtering of bird life ; the prejudices and heartburnings that a destruction scheme was likely to evoke amongst naturalists—all these were known to the Commission, and each of them contributed to caution and delay in making a definite proposal.

The views of landholders in the pear belt were first obtained, and the vast majority of them were found to favour, and indeed to urge, a vigorous campaign against Emus, Crows, and Scrub-Magpies (*Strepera graculina*). Western shire councils were next consulted, and without exception they expressed their desire to co-operate with the Commission in giving landholders this relief. Here then was a vast body of public opinion. It came from experienced men who had a knowledge of grazing and agriculture, and of the part that birds play in the life of the community. It was, therefore, entitled to weight. But this was not regarded as sufficient. After all, the responsibility of doing the right thing vested with the Commission, so certain tests were made and further inquiries were instituted.

As a result of all this investigation the case for the destruction of Emus, Crows, and Scrub-Magpies may be summarised as follows :— Each statement is not an expression of opinion but of fact that has been amply demonstrated :—

(1) The vast majority of landholders desired the destruction of these birds which were present in the pear belt in large numbers.
(2) All western local authorities in the pear-belt reported in favour of these birds being destroyed in their districts.
(3) Each of these birds is a voracious eater of pear fruit, and spreads the seed far and wide.
(4) The pear seed when passed uninjured through the digestive tract of these birds germinates much more rapidly than the seed of ripe pear fruit merely fallen to the ground.
(5) Each of these birds has a wide feeding range, while other smaller birds in the pear belt have a very limited feeding area. Marked Crows have been known to travel a distance of 40 miles within a few days.
(6) Infestation caused by these birds has often been found many miles away from the nearest fruiting pear.

It must be remembered that the Commission aims at the destruction of the above-mentioned birds only. Moreover, the shires embraced in the Commission's scheme comprise only a small part of the State, while the continuous destruction of bird life already taking place, for economic reasons, in coastal districts, under the directions of the various Pest Boards, far exceeds anything contemplated by the Commission.

It now remains only to consider the economic value of the birds being destroyed. Of these, the pear-eating Emu is of practically no value. An ample field for the preservation of this species is to be found in the non-pear-infested portions of the State. Reasons for retaining it in the pear belt there are none. Of the birds mentioned, the Crow alone may be regarded as of some small value in eating carcasses that are a breeding-ground for blowflies. But then the Crow does serious damage in other directions. Sheep-men know the damage caused by Crows amongst weak sheep and breeding ewes. Even cattle, when down with semi-starvation or sickness, often have their eyes picked out. For every carcass the Crow eats it may make another. So the economic value of this bird in grazing areas is open to grave doubts. Its good points are counterbalanced by its bad. The Crow has no friends amongst graziers and well might be banished from the pear areas.

It must also be kept in mind that the three species of birds being destroyed, when living outside of the pear belt, are not heavy fruit eaters. When pear fruit is available, however, it constitutes their main diet. It follows, therefore, that the ordinary economic value of such birds in killing harmful insect life is lessened, if not destroyed, when the birds habitually live in the pear areas.

Already working in co-operation with the Local Authorities, the Commission would welcome the co-operation of any Naturalists' Association in watching the working of the scheme.

It is intended that Emus and Scrub-Magpies be shot and Crows be poisoned or trapped. Thus it is difficult to see that other birds will be affected. Insectivorous birds generally are not likely to be touched to any extent. But we wish to make it clear that we do not countenance a general slaughter of bird life, and if our scheme is likely to develop into this it will be reviewed.

The subsidies payable by the Commission as from the 1st February, 1926, the date of the commencement of the scheme, are as follow :—

Emus	2s. 6d. per head.
Crows	6d. per head
Scrub-Magpies	4d. per head
Emu eggs	1s. each.

The shires in which the scheme is in force are listed hereunder :—

Balonne
Banana
Bauhinia
Bendemere
Booringa
Broadsound
Bungil
Chinchilla
Duaringa
Emerald
Murilla
Murweh
Peak Downs
Tara
Taroom
Warroo
Waggamba

All councillors, the clerk, and the engineer of each shire are acting as honorary receivers of heads, and payments of bonuses are made on receipt of receivers' certificates that the heads have been effectively destroyed. Checks have been imposed to prevent duplication or fraud.

The following figures give information as to the number of birds destroyed and bonuses paid from the 1st February to the 30th June, 1926 :—

Description.	Number.	Bonuses Paid. £	s.	d.
Emus	8,441	1,055	2	6
Crows	10,039	250	19	6
Scrub magpies	1,154	19	4	8
Emu eggs	7,117	355	17	0
Total		1,681	3	8

In addition, the sum of £127 was advanced to shire clerks acting as receivers to enable them to make payments over the counter from time to time to persons bringing in small lots of heads or eggs.

A Trip to the Coorong.

By M. A. R. Arnold, R.A.O.U., Melbourne.

It was my privilege during October, 1924, to visit that portion of south-eastern South Australia known as the Coorong.

Leaving Melbourne by the Adelaide express on October 19th, I arrived at Goolwa, S.A., on the morning of October 20th. Here I met Mr. H. H. Newell, R.A.O.U., and accompanied him to his home on Hindmarsh Island. After lunch a few hours were spent in a tour of the swamps and paddocks around the homestead. My host entertained me with local bird lore, and some birds and a few nests were noted. These observations and others made on Hindmarsh Island I have included in my Coorong list.

The following morning we journeyed to the southern end of the island, where we were joined by Mr. Geo. Hall, of Goolwa, with his motor-boat. Here the undulating country of the Island falls away to a wide stretch of marsh and samphire flats. At the time of our visits, this tract was inhabited by vast numbers of waders. Migratory visitors were present in thousands, scampering across the flats at our approach or rising in flocks with a flashing of white wings in the sunshine against the dull green background of salt bush. From among the dense coarse grass several Curlews (*Numenius*) were flushed. We were told that a young bird of this species, unable to fly, had been seen. Mr. A. J. Campbell informs me that a set of eggs were taken in North-West Australia some years ago, so it is not beyond the bounds of possibility that the species may breed occasionally in this secluded spot. However, though diligent search was made in various localities, no sign of a nest was discovered by our party.

Leaving Hindmarsh Island we steered a south-easterly course, and throughout the morning made good headway through the murky waters of Murray Mouth. Occasional flocks of Ducks were seen at rest on the water or flying overhead. To seaward, clouds of Gulls and Terns circled above the tumultuous waters of the estuary; while everywhere on the sandy beaches Pelicans and Cormorants rested.

Early afternoon saw us in the Coorong. There the channel narrows to about one and a half miles. The water is shallow, weed-grown, and extremely saline. Feeding in the shallows and along the shelving beach were large parties of Stilts and Avocets. A large flock of Double-Banded Dotterels was also noted on this beach. Near 2 p.m. we came up with large flocks of feeding water-fowl, Black Swans and Australian Coots predominating numerically. Ever and anon this great flock startled by the boat, rose from the water in clouds, to alight again farther and ever farther ahead.

Throughout the afternoon this continued until a half-hour before sunset, when, without warning, the birds "broke" back to their haunts astern. In twos and threes at first they rose, the flashing of white wings vivid in the slanting rays of the sun. Then they rose in ever-increasing numbers, until the whole horizon was an animated scene of waving wings, the beating of which on the water came to our ears as the sound of surf on a shingle beach. Then they came, a dense cloud of black and white, flying low and dividing around the boat. This wonderful spectacle continued until, when darkness settled down, straggling parties were still winging their way silently by. I should say, on a conservative estimate, that the number of individuals in this flock would have run into six figures. As nests had not been observed in any great numbers, these birds apparently constituted the non-breeding population.

During the following day (October 22) many islands were visited, on all of which we found Swans nesting in hundreds. On a small wooded island visited during the afternoon a bird was flushed twice from among dense undergrowth, and though seen for only a few seconds on each occasion, and then in flight, there is little doubt but that it was the Ground Parrot (*Pezoporus*).

On October 23rd we visited a low-lying island on which a small colony of Pelicans had established a rookery. About twenty pairs were nesting on the bare, sandy ground. An adjacent island we found to be occupied by Caspian Terns, which were nesting freely. On the same island we examined a few nests of the Pied Cormorant.

In many localities pairs of Pied Oyster-Catchers were noted, each pair apparently being quite local in their habits and frequenting one stretch of beach or a tiny rock island. Several nests were found, and each contained only a single egg. This seems to constitute a full clutch for the locality.

A fine spectacle was witnessed during a visit to a large Silver Gull rookery on what is locally known as Bluff Island. Here, among the tangle of rocks and heath on the bluff face, probably 5,000 birds were nesting. These apparently took flight together when we landed; they soared aloft and about our ears, scolding and screaming.

After an absence extending over five days we returned to Hindmarsh Island on October 25th.

The Coorong is a sanctuary, and as no gun was carried, identification of some species was rendered somewhat difficult. However, field-glasses were used to the best advantage, and altogether 63 species were noted.

Emu (*Dromaius novæ-hollandiæ*).—Tracks of this species were seen in various places on the bare sand-hills between the Coorong and the sea.

Banded Land-Rail (*Hypotænidia philippensis*)—A few birds were flushed on the larger islands.

Black Moor-Hen (*Gallinula tenebrosa*)—A common bird in the reed-beds around Hindmarsh and Mungo Islands.

Bald Coot (*Porphyrio melanotus*)—Inhabiting reed-beds, where numerous birds were seen, some caring for young.

Coot (*Fulica atra*)—With the exception of the Black Swan, this was by far the commonest bird at the time of our visit. Large flocks were everywhere, feeding among the weeds in shallow water. The species breeds annually in large numbers on Lake Alexandrina. In the Coorong, however, there were no indications of the species nesting during the season 1924.

Black-throated Grebe (*Podiceps ruficollis*)—Common among reed-beds about Hindmarsh Island, where some nests and young were noted.

Hoary-headed Grebe (*Podiceps poliocephalus*)—A few seen near the Goolwa ferry, where the species breeds annually.

Great Grebe (*Podiceps cristata*)—A few isolated birds seen.

Caspian Tern (*Hydroprogne caspia*)—A very common sight throughout the trip. A party was nesting on a small island.

Crested Tern (*Sterna bergii*)—A few met with everywhere, resting on convenient sand-bars or circling overhead.

White-fronted Tern (*Sterna striata*)—Seen once in company with the foregoing.

Fairy Tern (*Sterna nereïs*)—Common in the bays and on beaches, where small parties were noted. One party appeared to be breeding or about to breed, but though search was made, no nests were found.

Silver Gull (*Larus novæ-hollandiæ*)—Very common everywhere. Several breeding colonies were visited, where we found the nests in various situations, among the rocks and heath.

Pacific Gull (*Gabianus pacificus*)—A few of these beautiful Gulls noted on Coorong beach.

Pied Oyster-Catcher (*Hæmatopus ostralegus*)—A pair inhabited every suitable stretch of pebbly beach, where usually a nest containing one egg was found.

Black Oyster-Catcher (*Hæmatopus unicolor*)—One pair noted. No sign of these breeding at the time of our visit.

Red-kneed Dotterel (*Erythrogonys cinctus*)—A lone bird seen on Coorong beach.

Spurwing Plover (*Lobibyx novæ-hollandiæ*)—Frequently seen and heard. Common on Hindmarsh Island. A month-old bird was found hidden among the saltbush on a flat.

Banded Plover (*Zonifer tricolor*)—A very common bird on Hindmarsh Island, where the species breeds annually. At the time of my visit young were on the wing and the birds were associating in parties of a dozen or more.

Grey Plover (*Squatarola squatarola*)—Seen once on samphire flat.

Double-banded Dotterel (*Charadrius bicinctus*)—A large flock seen on Coorong beach. This was strange as usually the species nests in New Zealand at this season. Possibly at the time of observation the migratory flight was about to commence.

Red-capped Dotterel (*Charadrius ruficapillus*)—Very common on all beaches and samphire flats. Fully-fledged young were noted and some nests containing eggs were seen.

Black-fronted Dotterel (*Charadrius melanops*)—Frequently met with in pairs on the beaches and flats.

Hooded Dotterel (*Charadrius cucullatus*)—One pair seen on beach.

White-headed Stilt (*Himantopus leucocephalus*)—Common everywhere on the beaches and on Hindmarsh Island, in flocks with Banded Stilt and Avocet. Mr. Newell recollects the species nesting in past years in the locality, though at the time of my visit we saw no indications of breeding.

Banded Stilt (*Cladorhynchus leucocephalus*)—A few noted with each flock of the foregoing.

Red-necked Avocet (*Recurvirostra novæ-hollandiæ*)—On Hindmarsh Island Avocets showed signs of breeding in a swamp near the homestead. When I left on October 26th no nests had been found.

Australian Curlew (*Numenius cyanopus*)—Several birds seen in marshes at the southern end of Hindmarsh Island.

Bar-tailed Godwit (*Limosa lapponica*)—Small parties seen occasionally on beaches.

White Ibis (*Threskiornis molucca*)—A few were observed feeding in a swamp.

White-faced Heron (*Notophoyx novæ-hollandiæ*)—A common bird in the locality.

Black Swan (*Chenopis atrata*)—By far the commonest species noted. Everywhere large flocks were feeding among the weeds in shallow water. Hundreds of nests were seen on almost every island visited, where the whole scene was much polluted by guano and littered with broken egg-shells.

Plumed Whistling Duck (*Dendrocygna eytoni*)—A small party flew overhead on the morning of October 22.

Chestnut-breasted Shieldrake (*Casarca tadornoides*)—A few seen throughout the trip. On a densely-wooded island Mr. Newell flushed a bird from among a tangle of undergrowth, and on search being made a nest was found placed on the ground and exceptionally well concealed. The clutch of twelve eggs were examined and showed signs of advanced incubation.

Black Duck (*Anas superciliosa*)—Common in large flocks, feeding among the aquatic weeds.

White-eyed Duck (*Nyroca australis*)—A few small parties noted. Not by any means a common species in the locality.

Musk Duck (*Biziura lobata*)—Common throughout the Coorong. A few birds were seen on Hindmarsh Island, where the species breeds freely in wet seasons.

Black Cormorant (*Phalacrocorax carbo*)—Common everywhere. Though found in company with the Pied Cormorant, which species was breeding in various localities, there were no indications of the Black Cormorant nesting.

Pied Cormorant (*Phalacrocorax varius*)—Large parties nested on every rocky promontory. Several nesting colonies were visited.

Australian Pelican (*Pelecanus conspicillatus*)—Common everywhere. A small party was nesting on the bare sand on a tiny island.

Allied Swamp-Hawk (*Circus approximans*)—A bird was flushed from a nest on one of the small islands. The nest contained two eggs and two newly hatched young.

Brown Hawk (*Falco berigora*)—Seen once in combat with a party of Silver Gulls, which were breeding nearby. The Hawk beat a retreat, badly outnumbered.

Nankeen Kestrel (*Falco cenchroides*)—Common near the homestead on Hindmarsh Island.

Ground Parrot (*Pezoporus wallicus*)—One bird was flushed from a patch of undergrowth on a low-lying wooded island.

Welcome Swallow (*Hirundo neoxena*)—Several pairs nest annually around the outbuildings on Hindmarsh Island.

Black-and-White Fantail (*Rhipidura leucophrys*)—Met with frequently. Some nests were noted, one at Mr. Newell's homestead being within a few feet of the house and overhanging a path in constant use.

Black-faced Cuckoo-Shrike (*Coracina novæ-hollandiæ:*—Seen occasionally. A nest climbed to contained three incubated eggs.

Brown Song-lark (*Cincloramphus cruralis*)—A common bird on Hindmarsh Island.

White-fronted Bush-Chat (*Ephthianura albifrons*)—Very common on Hindmarsh Island and on samphire flats everywhere. In October young were on the wing.

Orange-fronted Bush-Chat (*Ephthianura aurifrons*)—A few seen in company with the foregoing. Previous to my visit Mr. Newell had a nest under observation on Hindmarsh Island.

Fantail-Warbler (*Cisticola exilis*)—Apparently a fairly common species on the tussocky flats on Hindmarsh Island. Though search was made, no nests were found.

Little Grass-Bird (*Megalurus gramineus*)—Fairly numerous and breeding on Hindmarsh Island.

Yellow-tailed Thornbill (*Acanthiza chrysorrhoa*)—A few noted in various localities. Not a common species anywhere.

White-browed Wood-Swallow (*Artamus superciliosus*)—Seen once on Hindmarsh Island.

Dusky Wood-Swallow (*Artamus cyanopterus*)—Common on Hindmarsh Island, where the species breeds annually.

Grey Shrike-Thrush (*Colluricincla harmonica*)—Seen occasionally, but more frequently heard in the wattles near the beach.

Striped Honey-eater (*Plectorhyncha lanceolata*)—Seen many times feeding among the wattles and tea-tree. The species nests annually on Hindmarsh Island.

Singing Honey-eater (*Meliphaga virescens*)—The commonest bird in the scrub everywhere, and the noisiest. A few nests were found on various islands.

Red Wattle-bird (*Anthochæra carunculata*)—The harsh note was heard once in the wattles on the sand-hills.

Pipit (*Anthus australis*)—Common in the paddocks on Hindmarsh Island, where some nests were found.

Bush-Lark (*Mirafra horsfieldi*)—A few seen and heard in the paddocks. Mr. Newell told me the species is fairly common and breeds annually on Hindmarsh Island.

Raven (*Corvus coronoides*)—Many hovered over the islands where Swans were nesting. Many broken eggs in the Swans nests examined testified to the depredations of these incorrigible marauders.

A Confident Builder.—Bell's Parade, which lies along an inlet of the Mersey River, near Latrobe, is a fine place for native birds. Last week I had the pleasure of viewing a nest of the Satin Flycatcher (*Myiagra cyanoleuca*) there, situated on a slender fork of tea-tree (*Melaleuca ericifolia*) which overhung a rustic footbridge. As the fork was only ten feet or so above the bridge-planking, the nest was in full view; it was a shallow cup, perfectly circular, and well-bound with that favourite cement, spider-web. The bird was sitting, her long slender tail projecting over the rim on one side, and her head just showing at the other. As this species is usually a very high builder, I was glad to have viewed one of their cradles at such close quarters, and only hope that the delightful confidence of this charming bird in passers-by has not been misplaced.

Only a few yards from the footbridge, in a rustic tea-house, a pair of Flame-breasts (*Petrœca phœnicea*) have built on a round pole which runs across a few feet under the bark roof. The male, in splendid plumage, just outside the shed, attracted my attention, and when I went inside, there was the nest, in a nice sheltered situation, with the female sitting.—H. STUART DOVE, West Devonport, Tasmania (8/12/26).

Stragglers and Migratory Birds of New Zealand.

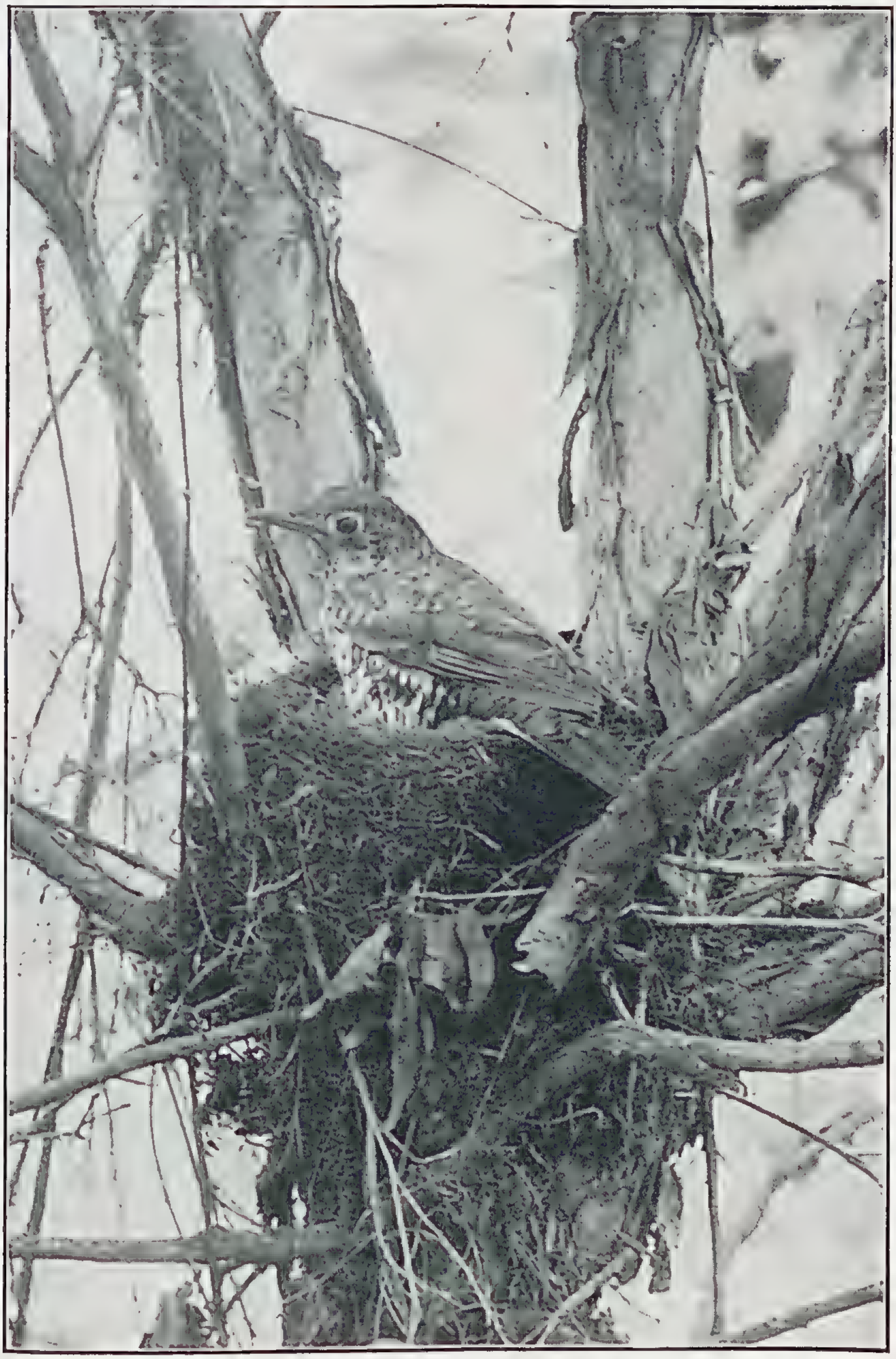
BY R. H. D. STIDOLPH, R.A.O.U., Masterton, N.Z.

AN attempt has been made to investigate the stragglers and migratory birds of New Zealand, with the object of tabulating the list of records, bringing it up to date, and giving the references in each case. Mathews and Iredale, in their " Reference List of the Birds of New Zealand " (*Ibis*, 1913, pp. 201-263, 402-452), queried records which had previously been accepted and at the same time accepted others which had been disallowed. In their later " Name List of the Birds of New Zealand " (*Austral Avian Record*, Vol. IV, 1920, pp. 49-64), some of the visiting species were indicated as having occurred more or less than three times, whereas such results are not in accordance with records available to the writer. These points, however, are dealt with under the name of the species concerned. Incidentally, Mathews and Iredale state (*Austral Avian Record*, p. 49) :—" We included all the visiting species as there is a lot of work to be done in this connection, and place against those which have only occurred three times or less an asterisk to attract attention, but we have not starred any Petrels." A valuable paper on the " Migratory Plovers of New Zealand," by Edgar F. Stead, appeared in the " Transactions of the New Zealand Institute," Vol. LIV (1923) pp. 490-495, and therein Stead's records altered the status of many of the visiting species.

It will be noted that in some instances a record of a species having been seen is inserted, although no actual specimen was secured; these references are indicated merely to indicate the *probable* occurrence of the species and must be accepted in that category. The name of the recorder in these cases is given where available. The New Zealand area includes, besides the mainland and adjacent islands, the sub-antarctic islands lying south—the Macquarie, Bounty Campbell, Auckland and Antipodes groups—and to the eastward, the Chathams, while 600 miles to the north are the Kermadec Islands. Many of the species breeding on these outlying islands have not occurred on the mainland of New Zealand except as stragglers. These occurrences have also been included in this compilation.

It is difficult in the case of some species definitely to determine whether the species is an irregular or regular visitor or accidental visitor, and these cases are indicated by a query.

The references have in all cases been verified by the writer, and every endeavour made to ensure accuracy. I wish to acknowledge my indebtedness to Messrs. R. A. Falla (of Auckland), Gilbert Archey (Auckland Museum), W. R. B. Oliver and H. Hamilton



MOUNTAIN-THRUSH (*Oreocincla*) AT NEST.
(This species was noted near the R.A.O.U. Camp, Williams River).

Photo. by J. S. P. Ramsay.

(Dominion Museum, Wellington), Professor R. Speight (Canterbury Museum, Christchurch), Professor W. Benham (Otago University Museum, Dunedin), Dr. W. McKay (Greymouth), Mr. A. S. Wilkinson (Kapiti Island), and Mrs. Perrine Moncrieff (Nelson), without whose aid it would not have been possible to prepare this compilation.

In the following list, for the sake of brevity, certain abbreviations have been made. In the first instance is given the date (where known) followed by the number of specimens *secured*, the locality, and if deposited in any museum, the name of the recorder (where required or available) and lastly the reference. Where a bird was seen but no specimens procured that fact is mentioned. With regard to the references the volume, followed by the page number, is given in every case.

Trans.—" Transactions of N.Z. Institute."
Pro.—" Proceedings of N.Z. Institute."
B.B.—" A History of the Birds of N.Z."; 2nd. Ed. 1887 (Buller).
Supp.—" Supplement to the Birds of N.Z."; 1905 (Buller).
Godman—" Monograph of the Petrels."
Birds Aust.—" Birds of Australia"; 1912 (Mathews).
Sc. T.—" N.Z. Journal of Science and Technology."
Cat. B.N.Z.—" Catalogue of Birds of New Zealand"; 1871 (Hutton).
Jour. Sc.—" Journal of Science."

Other contractions :—Bul. Col.—Buller Collections ; M.—Museum ; Dom. M.—Dominion Museum ; Marl. —Marlborough ; Auck.—Auckland ; Wgtn.—Wellington ; Cant.—Canterbury ; West. —Westland ; Sthld.—Southland ; Chch.—Christchurch ; Tar.—Taranaki ; Wang.—Wanganui.

NOTE.—It should be noticed that in some cases where specimens were deposited in museums by Buller, they were later removed by him and included in his own collections.

Eudyptes sclateri, Big-crested Penguin.—1893 (about), two, adult pair, Otago Coast (Bul. Col.) Trans. XXV, 83 ; 1924, one, Seatoun, Wgtn. (Dom. M.)

Eudyptes chrysocome, Tufted Penguin.—Breeds Dusky Sound (Buller) Supp. I; 84. It is doubtful if Buller was correct in the identification of this species as breeding at Dusky Sound, as *E. pachyrhynchus* also breeds in that locality. Unfortunately, Buller confused the Penguins, and his records have consequently to be verified. It would appear from present indications that *E. chrysocome* does not breed on the New Zealand mainland, but occurs there as a straggler only.

Eudyptes schlegeli Macaroni Penguin.—1877 (March), one, Brighton, Otago. B.B. II, 298 ; one, East Coast, Otago (Otago M.), B.B. II., 197 ; 1880-81 (summer), one Napier, Hawkes Bay, B.B. II. 297. *E. chrysolephus* (?—syn). Stuart-Sutherland (*Emu*, Vol. XX, p. 79) records that he has on numerous occasions observed this bird near Taiaroa Pen., Otago.

Much confusion has existed in the past in the identification of species of the genus *Eudyptes*. It appears that *E. pachyrhynchus* alone breeds on the mainland.

Aptenodytes patagonica, King Penguin.—One, Stewart Is. (Bul. Col.) B.B. II. 306 ; 1878, one, Moeraki, Otago (Hutton) (Otago M.) Trans. XXV, 85 ; 1924 (winter), one Auckland Harbour (Falla) ; new record. This species has also been seen on the Antipodes and Campbell Islands according to Capt. Bollons, of the Government Steamer *Hinemoa*, who regularly visited these outlying islands. In September, 1924, Mr. R. A. Falla, of Auckland, identified the remains of a Penguin found in Auckland Harbour as those of *Aptenodytes patagonica*. It is an extremely rare occurrence for this Penguin to wander so far north.*

NOTE.—All the above mentioned species of Penguins are accidental visitors on the N.Z. coast, but breed on the sub-antarctic islands to the south.

Fregetta lineata, Samoan Storm-Petrel.—1829, one, off East Cape, North Is., Astrolabe Exp. (Paris M.) Godman; one, off Banks Pen. South Is. (British M.). Accidental visitor.

Puffinus pacificus, Wedge-tailed Shearwater.—" Buller entered this species as a New Zealand bird on the strength of two specimens recorded by Salvin as from that country. These examples were found in our own collection and were purchased of Whitely; the locality may be erroneous as the species has not since been found in New Zealand." (Godman, p. 88). Breeds at the Kermadec Islands, but does not appear to occur in New Zealand.

Puffinus tenuirostris, Short-tailed Shearwater.—" It is very doubtful whether this species has occurred in New Zealand waters. Buller's notes in his Supplement do not refer to this bird . . . . no authentic record of its breeding in New Zealand is to be found." (Mathews & Iredale, *Ibis*, 1913, p. 228). This conclusion is correct; Buller's statements that it is " very abundant on our coasts, " breeds on all islands in Hauraki Gulf," breeds on Kaimanawa Ranges," etc., are absolutely contrary to fact. However, in recent years the species has been recorded by Falla, a safe authority. 1919 (Jan.), one, West Coast, Auckland (Falla), *Emu*, XXI, 206. Hutton recorded one from the Kermadecs (Proc. Zool. Soc., 1893, p. 749). Accidental visitor.

Procellaria cinerea, Grey Petrel.—1891 (about), two (pair), between N.Z. & Chatham Is. (Buller), Trans., XXIV, 69; 1905 (Sept.) one, male, near N.Z.; Birds Aust., II., 121; 1919 (March), one, Evans Bay, Wgtn. (Drummond). Accidental visitor.

Priocella antarctica, Silver-grey Petrel.—One, Turakina River, Wgtn. (Dom. M.), B.B. II., 228; one, Moeraki, Otago, Supp. I., 108; one, Nelson (? Bul. Col.), Supp. I., 108; one, Otago (? Bul. Col.), Supp. I., 108; three, from S. of N.Z. (Rothschild Col.), Godman, III., 167; 1917 (Jan.), one, Muriwai, Auckland, (Falla), *Emu*, XXI., 206. Accidental visitor.

Thalassoica antarctica, Antarctic Petrel.—There is a specimen in the British Museum (B.B. II., 229) said to have been obtained here, but this record is apparently too indefinite for acceptance. Queried by Mathews & Iredale (*Ibis*, 1913) but retained in " Name List " (*Austral Avian Record*, 1920). Buller (Supp. I., 108) states: " This Antarctic form has been added to the list by Sir James Hector on the authority of a specimen (now in the Colonial Museum) shot on the high seas between New Zealand and Tasmania. The spot mentioned by Sir James Hector (Trans. IX. 464) is 1000 miles *west* of Tasmania, and he made no reference to add the species to the New Zealand list.

Halobaena caerulea, Blue Petrel.—1877, one, Cape Campbell, Marl. (Buller) Trans. XI. 365; 1882, one (male), Little Barrier Is. (Reischek Col.) (Iredale) A.A.R. II., 25; one, obtained N.Z. Coast (Auck. M.), B.B. II., 214; 1899 (Nov.), one, Macquarie Is. (Rothschild M.) (H. H. Travers) Godman, 283; 1918 (July), one, Rangitikei River, Wgtn. (Drummond); 1923 (Oct.), one, Tauranga, Auck. (Auck. M.); 1924 (Aug. 8) one, Tamaki River, Auck. (Auck. M.). The Little Barrier record is interesting; may it not breed there? It has always been considered a rare species in New Zealand. Accidental visitor.

Diomedea chionoptera, Snowy Albatross.—Although not mentioned by Mathews & Iredale (*Ibis*, 1913) it was included in their name list (*Aust. Avian Record*, 1920). Hutton and Drummond included it in their " Animals of N.Z.," 1905. The authority for the acceptance of this species in the N.Z. list is not known to the writer.

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*Falla's record must be regarded as doubtful unless the remains have been preserved.—EDITOR.

Fregata minor, Greater Frigate-Bird.—1863 (Feb.), one, Castlepoint, Wgtn. (Dom. M.) (Buller), Trans. I., 231 ; 1901 (Apr. 15), one, Cape Farewell, Nelson (Bul. Col.), Supp. II., 50 ; 1903 (about) one, Westport, Nelson (Townson), Supp. II., 51. Accidental visitor.

Fregata ariel, Lesser Frigate-Bird.—1861 (early), one, Wakapuaka, Nelson (Nelson M.) (Buller), Trans. I., 231 ; 1907 (Mar. 30), one, Pahi, Kaipara, Auck. (Auck. M.) (Cheesman), Trans, XL., 265. Mathews & Iredale asked that the Nelson specimen should be re-examined. Mrs. Perrine Moncrieff, of Nelson, has done this, and is satisfied the identification is correct. Accidental visitor.

Anhinga novae-hollandiae, Australian Darter.—1874, one, Hokitika, West, (Cant. M.), (Buller) Trans., VII, 217. Accidental visitor.

Pelecanus conspicillatus, Australian Pelican.—1890, one, Wanganui River, Wgtn. (Buller), Trans., XXV., 61. Accidental visitor.

Sula leucogaster, Brown Gannet.—1888 (July), one, Napier, Hawkes Bay (Hamilton), Trans., XXI., 128 ; 1910 (about) one, Bay of Islands, Auck. (Auck. M.), Pro. XLIII., 80. Accidental visitor.

Phaethon rubricaudus, Red-tailed Tropic-Bird.—1878 (about) one, off Three Kings, Auck. (Buller) Trans., X., 219. Breeds at the Kermadecs, but an accidental visitor in N.Z.

Chlidonias leucoptera, White-winged Black Tern.—1868 (Dec. 12), two, Waihopai River, Nelson (Brit. M.), B.B., II., 77. Mathews concluded that this record is quite inadmissible (Birds Aust., II., 314) as these birds were in *full breeding plumage*. Alexander (*Emu*, Vol. XVII., p. 99), writing of a visitation of numbers of these birds in Western Australia, stated ; " In this connection I may point out that the presence of birds in *full breeding plumage* in Western Australia suggests that the New Zealand and Cape York records, which Mathews does not accept, may be genuine." In view of this evidence, the New Zealand record surely must be allowed. Accidental visitor.

Sterna bergii, Crested Tern.—1910 (April 1), one, Kermadec Is. (Auck. M.) (Oliver) Trans., XLV., 93. Accidental visitor.

Sterna fuscata, Sooty Tern.—1918 (March 20) one, Te Kuiti, Auck. (Auck. M.) Pro. LI., 501. Accidental visitor in New Zealand but breeding at the Kermadecs.

Procelsterna cerulea, Little Grey Noddy.—1882 (early), one, Cape Maria Van Dieman, Auck. (Bul. Col.) B.B. II., 78 ; 1883, May, one (male) Waipu, N. Auck. (Reischek Col.) (Iredale) A.A.R. II, 30 ; Breeds plentifully at the Kermadec Islands, but an accidental visitor to N.Z.

Anous stolidus, Noddy.—1885, one (male), East Coast, North Is. (Reischek Col.) (Iredale) A.A.R. II, 30 ; one, near N.Z. Coast (Cant. M.), Supp. I., 162. Accidental visitor ; occurs at the Kermadecs.

Gygis alba, White Tern.—1883, two (male and female) Waipu, N. Auck. (Reischek Col.) (Iredale), A.A.R. II, 30.) Breeds at Kermadec Islands. Accidental visitor to New Zealand.

Catharacta maccormicki, South Polar Skua.—1895 (summer) one, Stewart Is. (Bul. Col.) Supp. I., 170. Accidental visitor.

Stercorarius parasiticus, Arctic Skua.—1864 (April 30), one, Horowhenua, Wgtn., B.B., II., 66 ; one Dominion Mus. (?) Wgtn. (Buller), Trans. VII, 225 ; 1877 (Jan.) one, Wgtn. Harb. (Bul. Col.), Trans., X., 200 ; 1877 (Nov.) one, Cape Campbell (Bul. Col.), Trans., XI. 355 ; 1897 (about) two, Bay of Islands (Auck. M.) (Pycroft) ; 1898 (about) one, Wairarapa Lake, Wgtn. (Buller), Trans., XXXI., 24 ; 1924 (Nov.) one (young) Farewell Spit, Nelson. ; 1926, one, off Banks Pen., Cant. Of this species Mathews & Iredale (*Ibis*, 1913) comment as follows :—" So much confusion exists through the uncertain naming by European ornithologists of birds killed in New Zealand, that it is quite impossible to decide from the literature whether all the references belong to one species. We are inclined to believe that both the Arctic and Long-tailed Skuas have occurred in New Zealand waters. It should be noted that in Buller's first edition of the ' Birds of New Zealand ' (1873, p. 269) the first specimen was referred to as *S. parasiticus* Linne = *S. longicaudus* Vieillet. Re-examination of the specimen preserved in the Dominion is necessary to decide this matter." The only specimens locally obtained that appear to be preserved in New Zealand are Pycroft's, obtained about 1897, and now in the Auckland Museum. These have been re-examined by Archey and the identification confirmed. Mathews & Iredale regarded this bird as an accidental visitor, but it has now been established that at least to the northern portions of New Zealand the bird is a regular annual visitor. Mr. A. T. Pycroft (Trans., XXXI., pp. 141-146) dealing with the birds of the Bay of Islands district, mentioned that this species was plentiful from November to April. Regarding this species Mr. R. A. Falla, of Auckland, states that " my notes on their occurrence from October till April apply to all northern waters as far south as the Bay of Plenty, anyway. They are regular annual visitors to the Waitemata, and I saw several dozen individuals in the Bay of Plenty last January (1925). They fly about in the vicinity of the large Gull and Tern colonies. Pycroft's skins are the mottled variety. I have seen many with the pure white belly." Regular visitor to North Island (N.Z.), and probably so to South Island.

Gallinago hardwickii, Australian Snipe.—1898 (March 26), one, Arch Hill, Auck. (Auck. M.) (Cheesman), Trans., XXXI., 105. Accidental visitor.

Calidris canutus, Knot.—It appears that this species is a regular visitor to N.Z.; 1910 (Oct. 17), one, Kermadec Is. (Oliver), Trans., XLV., 93.

Erolia testacea, Curlew-Sandpiper.—1902 (Feb. 3), one, Lake Ellesmere, Cant. (Mathews & Iredale, *Ibis*, 1913, 259); 1903 (Apr. 5), two, Lake Ellesmere. Cant. (1 Cant. 1 Brit. M.) (Hutton), Trans. XXXVI, 155 ; 1903 (March), one, Lake Te Anau, Otago (Mathews & Iredale, *Ibis*, 1913, 259). Stead (Trans. LIV., 495) has since seen it on many occasions and secured a number of specimens. He believes it to be a regular migrant, and on one occasion saw between twenty and thirty. Regular visitor.

Erolia acuminatus, Sharp-tailed Sandpiper.—Although Buller reported this species as plentiful in certain localities in the North Island, and secured a number of specimens, Stead, who has specialised in the waders for many years, only obtained one (in Canterbury) (South Island) which is in the Canterbury Museum. 1908 (Oct. 25), one, Kermadec Is. (Iredale), Trans., XLV., 86; 1910 (Oct. 29), one, Kermadec Is. (Auck. M.) (Oliver) Trans., XLV, 93. Regular (?) visitor.

Erolia maculata, Pectoral Sandpiper.—1903, one, Lakes Ellesmere, Cant. (Stead); 1909 (Feb.), one, Lake Ellesmere; later, three, Lake Ellesmere; 1920 (Mar. 5) one, (immature) Lake Ellesmere (Cant. M.) Trans., LIV., 494. Irregular (?) visitor.

Erolia ruficollis, Red-necked Stint.—1902 (July 22), one, Lake Ellesmere, (Cant. M.) Stead, Supp., I., 186. A bird obtained by Stead at Lake Ellesmere in January, 1902, was identified by Capt. Hutton as *Heteropygia acuminata* (= *Limnocinclus acuminata*) but later referred by him to *Limonites ruficollis* (= *Pisebia ruficollis*). This specimen was sent to the British Museum and was named by Grant as *Tringa subarquata* (= *Erolia ferruginea*). Mathews & Iredale (*Ibis*, 1913) commenting on " these diverse attempts at nomination," ask that this record be re-investigated. Stead states (Trans., LIV., 493) that the specimen in the Canterbury Museum is undoubtedly *Pisobia ruficollis*, so that the record as above must be regarded as correct. The specimen sent to the British Museum, presumably, must be considered to be *Erolia ferruginea*. Irregular (?) visitor.

Erolia minuta, Little Stint.—1902, one, Taieri Flat, Otago (Haynes Col.), Trans., LIV., 493; 1910 (Feb. 8), one, Lake Ellesmere (Cant. M.), Stead, Trans., LIV. 493., later, five (?) same locality (2 Stead Col.) (3 Cant. M.), Stead, Trans., LIV. 493. Irregular (?) visitor.

Crocethia alba, Sanderling.—1917 (Jan.) one, Lake Ellesmere (Cant. M.) (Stead.), Trans., LIV. 494. Accidental visitor.

Tringa nebularia, Greenshank.—1874 (about) one, prob. Otago (Otago. M.) (Hutton) Trans., XXXIII, 253. Accidental visitor.

Tringa incana, Wandering Tattler.—1883 (autumn) two (pair) Portland Is. Hawkes Bay (Bul. Col.) B.B. II. 39 . Accidental visitor.

Limosa lapponica, Bar-tailed Godwit.*—Numerous examples in Auckland Museum from Kermadecs (Oliver), Trans., XLV., 93. Regular visitor to N.Z.

Limosa limosa, Black-tailed Godwit.—1902 (Mar. 4), one, Lake Ellesmere, (Brit. M.) (Stead) Supp. I., 185; 1917, one, seen Lake Ellesmere (Stead); 1918 (Jan. 1) one, Lake Ellesmere (Cant. M.); 1919 (Feb.), one, Lake Ellesmere (Stead Col.); 1921 (Mar. 5), one, Lake Ellesmere (Cant. M.), Trans., LIV., 492. Accidental visitor.

Mesoscolopax minutus, Little Whimbrel.—1900 (June) two seen, one shot, Lake Ellesmere (Cant. M.), Supp. I., 181; 1921 (Mar. 5) one, Lake Ellesmere, (Cant. M.) (Stead.), Trans., LIV. 492. Accidental visitor.

Numenius phaeopus, Whimbrel.—1874 (about) one, Wairau, Marl. (Dom. M.) (Buller), Trans., VII., 224; 1879 June, one (male) New Brighton, Cant. (Reischech Col.) (Iredale) A.A.R. II, 32; 1893 (Dec.) one, Westport, Nelson (Buller) Trans., XXV., 60; 1907, one, New River Estuary (Sthld. M.) (Philpott), Trans. LI., 224; 1908 (Sept. 24), one, Kermadec Is., (others seen) (Iredale), Trans., XLV., 86; 1925 (June) one, (female) Lake Ellesmere, Cant. (Cant. M.); 1925 (Sept.) one, Greymouth, West. (Dr. McKay). Accidental visitor.

Numenius cyanopus, Eastern Curlew.—1874 (about) one, Wairau, Marl. (Dom. M.) (Buller), Trans., VII., 224; Five, seen Marl. (Liardet), B.B., II., 46; (Feb.) one, Iron Bay, Wgtn. B.B., II., 46; 1876 (Apr. 2) one, Kaiapoi Bar, Cant. Trans., IX, 428; 1876 (June 27) one, Ashley River, Cant. Trans., IX., 429; 1896, one, Manakau Harb., Auck. (Auck. M..), Pro., XXIX, 620. Accidental visitor.

Phalaropus fulicarius. Grey Phalarope.—1883 (June) one, Waimate Lagoon, Cant. (Cant. M.), Trans., XVI., 279. Accidental visitor.

Recurvirostra novae-hollandiae, Red-necked Avocet.—1859-60, small flock seen Ashburton River, Cant.; one, Kaiapoi River, Cant.; 1863, five or six seen S.W. Coast, Wgtn.; two, near Dunedin, Otago; one, Lake Wakatipu, Otago (Otago M.); one, near Whangarei, Auck.; 1864, one (young) near Chch. (Cant. M.) (B.B., II., 20). Mathews & Iredale star this species (*Austral Avian Record*). Buller records specimens preserved as follows:—3 Otago M.; 2 Cant. M.; 1 Dom. M.; 2 Bul. Col.; 1 or 2 Tring M. (Supp. I., 180). Accidental visitor.

Arenaria interpres, Turnstone.—It appears that this species visits New Zealand every year.

Pluvialis dominicanus, Lesser Golden Plover.—This species also appears to be a regular migrant. Stead (Trans. LIV. 492), mentions it as a "common annual migrant."

Charadrius ruficapillus, Red-capped Dotterel.—1878 (Dec.) one, Otaki, Wgtn. (Dom. M.) (Kirk.) Trans. XII. 246. Accidental visitor.

Charadrius veredus, Oriental Dotterel.—1908 (April 24), one, Kermadec Is. (Iredale) Trans. XLV., 85. Accidental visitor.

Lobibyx novae-hollandiae, Australian Spur-winged Plover.—1886 (Aug. 4), one, Kai-iwi, Wanganui, Wgtn. (Wang. M.) (Kirk) Trans. XX., 33. Accidental visitor.

Stiltia isabella, Australian Pratincole.—1898 (about), one, Westport, Nelson, (Townson) Trans. XXXI. 23. Accidental visitor.

Crex crex, Corn-crake.—1868 (before) one, (Cant. M.) (Buller), Trans. I., 229. Disallowed by Buller, it was re-introduced by Mathews & Iredale (*Ibis*, 1913). Accidental visitor.

Tribonyx ventralis, Black-tailed Native-Hen.—1923 (June), one, Oraki, Sthld. (Otago M.) (Benham) Sc. T. VI. 191. Accidental visitor.

Fulica atra, Coot.—1889 (July), one, Lake Waihora, Otago (Otago M.), Supp. I., 75; 1919 (May), one, Kaitangata, Otago (Otago M.) (Benham); 1919 (July) one, Mataura Is. Sthld. (Sthld. M.); Sc. T. III. 55. Accidental visitor.

**Vetola haemastica*, Hudsonian Godwit (?)—EDITOR.

Dendrocygna eytoni, Plumed Tree-Duck.—1871 (about) one, Thames, Auck. (Hutton), Cat. B.N.Z., 77; 1871 (about) one, Kaitangata, Otago (Purdie), Trans., IV., 213; 1895, two males and one female seen Ashburton, Cant. (W. W. Smith), Trans., XXIX., 255. Accidental visitor.

Nyroca australis, White-eyed Duck.—This Duck was recorded by Mathews & Iredale (*Ibis*, 1913, p. 409) as " an accidental visitor, few occurrences." Hutton and Drummond, in *Animals of N.Z.*, recorded it as breeding around Waikato Lakes, probably on the authority of Hutton, who noted it as far back as 1868 in that district. It was also stated to be abundant on Lake Rotomahana, prior to the eruption of Mt. Tarawera. Several specimens having been procured since in both islands. No recent information of this species has come to hand. Resident or accidental visitor (?).

Plegadis falcinellus, Glossy Ibis.—1902 (May, one, Timaru, Cant. (Hutton), Supp. I., 192; 1917 (June), one, Waimate, Cant. (Private Col.). Accidental visitor.

Threskiornis molucca, Australian White Ibis.—1925 (March 5), one caught, Appleby, Nelson (Moncrieff), Sc. T., VII., 371; 1925, four seen, Westland, Nelson, Taranaki (Moncrieff), *Emu* XXV., 297; 1925 (April), one seen, Rotomanu West, Westland, new record. On 8th June 1925 I received a letter from a resident of Rotomanu, Westland, with reference to a strange bird that had appeared there about two months previously. By means of a good photograph of the bird sent with the letter I had no difficulty in recognising it as this species. It associated with the domestic fowls and always roosted in a large white pine. Accidental visitor.

Ardea cinerea, Grey Heron.—1898 (about), one, East Coast, Auck. (Buller), Trans. XXXI., 28. Accidental visitor.

Nycticorax caledonicus, Nankeen Night Heron.—*1856 (about), one, near Wgtn. (Dom. M.), B.B., II., 139; 1888 (Aug-Sept.), one, Catlins River, Otago (Bul. Col.), Supp. I., 197; 1892 (Dec.), one seen Pahaua River, Wgtn. (Kirk). Trans., XXVI., 181. Several occurrences in South Is., B.B., II., 139. Might have been an introduced bird; some were liberated about that time. Mathews & Iredale (*Ibis*, 1913) asked that the records of the specimens preserved should be criticised. Accidental visitor.

Notophoyx novae-hollandiae, White-fronted Heron.—The White-fronted Heron was recorded by Mathews & Iredale (*Ibis*, 1913, p. 404) as " New Zealand, extra limital." I can find no record of this species breeding in New Zealand and am inclined to believe it to be an accidental visitor. Specimens have been obtained from time to time. Resident or accidental visitor (?).

Platalea (*Spatherodia*) *regia*, Royal Spoonbill.—1876 (April), one, Manawatu, Wgtn. (Dom. M.) (Buller), Trans., IX., 337; 1892 (Jan.), one, Westport, Nelson (Townson), Trans., XXVIII., 349; 1905 (May), one, Greytown, Wgtn. (Iredale), Trans., XXXIX, 137; 1922 (June), one, Martinborough, Wgtn. (Dom. M.), *Emu*, XXII, 153. Accidental visitor.

Falco cenchroides, Nankeen Kestrel.—1889 (about), one, Waimate Cant. (Hutton), Trans., XXVIII, 359; 1895 (Apr. 5), one, Portland Is., Hawkes Bay (Dom. M.) (Buller) Trans. XXVIII, 359. Accidental visitor.

Cuculus optatus, Oriental Cuckoo.—1902 (Feb.), one, Lake Te Anau, Otago (Hutton) Supp. II., 102. Accidental visitor.

Eurystomus orientalis, Dollar-Bird.—1881 (early), one, Westland (Dom. M.), Pro., XIII, 454; 1881, one, Parihaka, Tar. (Bul. Col.), B.B., I., 119; 1881 (end), one, Piha Bay, North Auck. (Auck. M.), Trans., XIV., 265; 1881 (end), one, Waiwakaio River, Tar., B.B., I., 119; one, Westland (Cant. M.), B.B., I., 119; 1892, several shot in Wairea Dist., North Auck. (Buller) Trans., XXV., 70; 1894 (Nov.), one, Awatere, Marl. (Buller), Trans. XXVIII, 344. Accidental visitor.

Micropus pacificus, Fork-tailed Swift.—1884 (Dec.), one, White Cliffs, Tar. (Bul. Col.), B.B., I., 116. Accidental visitor.

Hirundapus caudacutus, Spine-tailed Swift.—1888 (March), one, Manaia, Tar. (Wang. M.), Trans., XXI., 232. Accidental visitor.

Hylochelidon nigricans, Australian Tree-Martin.—1851 (summer), one (flight seen) Wakapauka, Nelson, B.B., I., 75; 1856 (March 14), one, Cape Farewell, Nelson (Otago M.), B.B., I., 74; 1861, several seen near Chch., Cant. (T. H. Potts), Jour. Sc., II., 274; 1878 (June 9), one seen near Blenheim, Marl. (Buller), Trans., XI., 360; 1879 (Feb. 16), one near Blenheim (Bul. Col.), B.B., I., 75; 1892 (spring), two or three dozen seen Cape Farewell, Nelson, Trans., XXVII., 109; 1892-3 (spring-summer), large number visited N.Z.; reported a pair bred at Oamaru, Otago (Buller), Trans., XXVII., 108; 1896 (about), two seen, Mokohinau, Nelson. Has been noted at Westport for several years in succession (Townson), Trans., XXXI., 23; Mathews & Iredale (*Ibis*, 1913) ask that all specimens obtained be re-examined, and it should be decided whether they all belong to the typical sub-species or whether some are referable to *H.n.australis*, the Tasmanian sub-species. Accidental visitor.

Coracina robusta, Little Cuckoo-Shrike.—1869 (about), one, Motueka, Nelson (Nel. M.) (Hutton), Trans., V., 226; 1870 (Apr. 8), one, Invercargill, Sthld. (Dom. M.) (Hutton), Trans., V., 226; 1904 (June 11), one, Rabbit Is., Cant. (Cant. M.) (Hutton), Trans., XXXVII., 350. Accidental visitor. Mathews & Iredale (*Ibis*, 1913, p. 442), concluded that the New Zealand records of *Graucalus melanops* were referable to *Coracina robusta*. In the Checklist of the Birds of Australia, 1926, *Coracina novae-hollandiae* (*G. melanops*), is recorded as the species reported from New Zealand. Was Mathews & Iredale's finding overlooked or their decision not upheld?

Anthochaera carunculata, Red Wattle-Bird.—1855 (about), one, Matakana, Auck. (Auck. M.) (Buller), Trans., I., 56; 1885 (about), one, Rohutu, Tar. (Buller), Trans., XVI., 313. The first record was not allowed by Buller, but Mathews & Iredale apparently correctly reinstated it. Mathews & Iredale (*Ibis*, 1913) would like to know whether these stragglers belong to the typical sub-species which inhabits Queensland and New South Wales or to *C. c. tregellasi*, the form living in Victoria and South Australia. Accidental visitor.

Game Protection.

Much good should result from a pamphlet on "Game Protection," written for the Game Protection Society of Victoria by Mr. J. A. Ross, R.A.O.U. This address was broadcast from 3LO Melbourne by Dr. Norman McArthur on 30 October and 1 November, 1926, and no less than 50,000 copies have been distributed to senior scholars of the State schools. There being little "game" in Victoria apart from birds, it is with birds that Mr. Ross chiefly concerns himself in the address. He sets out the close seasons governing the shooting of various species (about 30 in number) and stresses the modern provision for the limitation of the number of birds that may be shot on one day. Mr. Ross strongly impeaches law-breakers who shoot birds in sanctuaries or during close seasons. Such men, he says, are blacklisted by Gun Clubs if convicted, and are debarred from taking part in shooting competitions. It is the opinion of Mr. Ross that, in spite of fires, foxes, cats, and other destructive agencies, certain species of game birds are not noticeably decreasing in Victoria. However, he does not advance that point as an excuse for laxity, but urges that every care should be taken to ensure that game laws are strictly observed.

Migration and the Telescope.

BY THE REV. WALTER WALTERS, Th. Schol., R.A.O.U.,
Member of the British Astronomical Association, Cowangie,
Victoria.

SOMEWHERE it is mentioned—I thought it was in *The Emu,* but careful search has failed to unearth the reference—that astronomers engaged in solar and lunar observations have often remarked on the numbers of birds seen crossing the apparent discs of the sun and moon. When I read this I was not particularly struck with the possibilities of ornithology at the telescope, and should probably have forgotten all about it but for a curious experience of recent date.

The moon was full at 3.15 p.m. (Eastern Australian standard time) on 21 October, 1926. It was to rise at Cowangie on the same evening at 6.52. In the early evening there was to be an occultation by the moon of 39B Arietis, a star of magnitude 6.5, situated, as its name suggests, in the zodiacal constellation of The Ram. The observation was not without its difficulties and the chances were against its success, especially at a station so far west as Cowangie, where the moon rises about 40 minutes later than at Sydney. However, an occultation at a time so near to full moon could be observed to advantage even in an observatory not equipped with a position-circle micrometer. Accordingly, I was at my post at the appointed hour. Astronomically I was disappointed, for the star was gone before the moon could be plainly seen. But the cloud which veiled the moon relieved any strain on the eyes and I was ready for anything else which could be seen.

Presently a bird fluttered across. It was just dusk; and the telescope was set very low. I decided to keep watch for a few minutes. Before I left the instrument quite thirty birds crossed the field of view. Some were gone in a moment. Others must have been far away and much higher, for although they beat their wings rapidly enough they were in view for many seconds. Then again at great distances a great radial velocity may be represented by very small tangential shift. In most cases, however, this last point could be determined from apparent angle of flight. If the bird appeared to be increasing its elevation gradually, it would probably mean in most cases that it was approaching the observer, and this, combined with slight tangential shift and rapid or normal movement of the wings, might settle the point.

I do not pretend that all the possibilities or all the difficulties were realised in a few minutes spent at the telescope, or that I have given all the thought that it deserves to one method which may *occasionally* add some little thing to what we know of birds and their movements. I have said " occasionally " because very little could be expected from the professional astronomer or even the keen amateur, as such. The greatest chance of seeing birds is, naturally, when the telescope is low. And that is not the position in which astronomical observations are made. Indeed, if it were possible to arrange it so, every observation could be made at the zenith where the disturbances from atmospheric causes are at a minimum; and in practice there are few observations which are made at an altitude less than 40 degrees above the horizon. The reason for this is obvious. Even if the atmosphere were limited in height to 10 miles one would have to pierce 322.3 miles of atmosphere in observations at the horizon, while even at an altitude of 20 degrees one would be looking through 29.1 miles of atmosphere subject to varying movements, temperatures, and densities. (Journal B.A.A., XXII, p. 24.)

Nor is this the only reason why astronomers, as such, could give very little assistance. In these days fewer visual observations of the sun and moon are made than formerly. Photogrpahy has revolutionised astronomy and in a time measured in seconds or even the fraction of a second the dry plate can record more than the skilful draftsman would even see on sun or moon in the course of prolonged and careful scrutiny. Visual observations of the sun may be said to be confined in the main to transits of Venus and Mercury, and those of the moon to occultations of stars and planets. The transits may be dismissed, for none of Venus will occur again till 2004 A.D., and those of Mercury come only about 4 times in 33 years. The next of the latter will be in May of 1927. But with the occultations by the moon the case is different. Hardly a month goes by but there are several such announced in the New South Wales Astronomical Bulletin.

After "immersion" there are before "emersion" several minutes during which it is advisable to remain at or near the instrument, and when the little diversion to be gained from keeping a look-out for birds might appeal to the amateur astronomer whose interest in the beautiful and wonderful in nature is not confined to the starry heavens. Such vigilance might be productive at or near full moon, with the moon and instrument low, and at a time when migrations, particularly of birds travelling in flocks, might reasonably be expected. The chief training for such work away from the instrument would be the study of characteristic flights of individuals and flocks, particularly when viewed *against* the light; for in the telescope all figures are silhouetted against the bright background of the sun or moon. There is no need to warn the astronomer of the protection of the eyes needed if even the moon is to be looked at in this way for protracted periods.

In conclusion, a few of the mathematical considerations involved may be treated very briefly. The mean angular semi-diameter of the sun is 16 minutes 1 second; that of the moon is 15 minutes 34 seconds. As they are similar it will be sufficient to consider the moon. If a bird were a mile off and flew *across* the line of sight and at right angles to that line, it would travel 47.817792 feet in traversing the full moon. There is no need to be quite so exact, especially as the moon does not always appear of the same size. If the bird were two miles off it would travel nearly 100 feet in crossing the full moon. If it crossed at anything but a right angle, which of course is more likely than not, the time occupied in crossing would be greater and the distance actually traversed would be greater.

In his *Natural History of the Ducks*, Dr. J. C. Phillips states that the Ducks, for instance, do not exceed sixty miles per hour. A Duck travelling at this top speed a mile away and directly at right angles to the line of sight would occupy 0.543384 of a second of time in crossing the mean apparent disc of the full moon. Even at four miles off the bird would be seen only for a little over two seconds. But, as earlier noted, sixty miles an hour is their maximum speed and the chances are against their flight being at right angles to the line of sight. It is not surprising that Ducks " get a move on " and exceed the speed limit with an aeroplane in full pursuit over the rice-fields of California ; but under normal conditions, and at a distance of a mile or two, it should not be difficult for an observer as skilled in ornithology as in telescopy to recognise the flight of a flock of Ducks and to report on the height and speed at which they travel.

A writer in *The Emu* in 1921 (XXI, p. 69), speaking as an aeronaut as well as a bird-observer, mentioned 16,000 feet as the *average* height of migration. I may be worth mentioning that birds travelling at that height, and distant nearly 4¾ miles from the telescope, would be within the range of an astronomer observing the moon at an altitude of 40 degrees.

I do not claim great possibilities for this line of investigation, but I hope to devote to the experiment any opportunities which may offer themselves. And no doubt there are other readers of *The Emu* who can bring to the task greater mental and more suitable instrumental equipment than I possess.

Correspondence.

POINTS OF NOMENCLATURE.

(To the Editor.)

SIR,—In the New Edition of our Checklist there is a paragraph re *Creadion*. This comes under the heading of Type Designation. For all future workers, I publish now, how type designation is done when following the "International Rules of Zoological Nomenclature," as published in 1905 and corrected in *Science* for 18 October, 1907 (New Series, vol. XXVI, No. 668), pp. 520-523. (P. 521, Art. 30) : A. " When in the original publication of a genus, one of the species is definitely designated as type, this species shall be accepted as type regardless of any other consideration.

(Type by original designation). C. " A genus proposed with a single original species takes that species as its type. (Monotypical genera.) D. " If a genus, without originally designated or indicated type, contains amongst its original species one possessing the generic name as its specific or sub-specific name, either as valid name or synonym, that species or sub-species becomes *ipso facto* type of the genus. (Type by absolute tautonomy.) G. " If an author, in publishing a genus with more than one valid species, fails to designate or to indicate its type, any subsequent author may select the type, and such designation is not subject to change." (Type by subsequent designation.)

NOTE.—" The meaning of the expression ' select a type ' is to be rigidly construed. Mention of a species as an illustration or example of a genus does not constitute a selection of a type." This last paragraph covers *Creadion*, and so far as I know Lesson in 1830 was the first who correctly designated the type of *Creadion*.

On page V in the paragraph discussing the name of the Kookaburra, I find that a name with a definite date must be accepted before one with the " evidence, at least, indefinite." Under this heading come *Psittacus banksii* Latham, 1790, before Dec. 9 (indefinite), *Psittacus magnificus* Shaw and Nodder, 1790, Dec. 1 (definite). Therefore, on our own showing we must call the Banksian Cockatoo *Calyptorhynchus magnificus* Shaw and Nodder; and *Psitticus banksii* Latham becomes a synonym.

On p. 35 of the Checklist we use the genus *Nyroca*, but is this correct? The dates at present accepted are :—*Aythya* Boie, *Isis*, heft V., May 1822 ; *Nyroca* Fleming, June, 1822. In the " Report of Committee," p. vi., we say, " It is hoped the rules will be followed strictly." On p. 39 we use *Baza* Hodgson, after January 4, 1837, for the large genus. But why not *Aviceda* Swainson ?

(*Aviceda* Swainson, *Classif. Birds*, Vol. I, p. 300, Oct. 1st, 1836. Type added (by monotypy) ib., *Birds of West Africa*, Vol. 1., p. 104, March 8th, 1837, *Aviceda cuculoides* Swainson.)

Dr. Van Oort, of the Leyden Museum, in which the type of *Malurus galactotes* is preserved, has sent it to London, where many of us have seen it. It turns out to be *Cisticola lugubris* Rüpp., 1835, and will replace that name. This will remove the name *Malurus galactotes* Temminck et Laugier, *Planch. Color. d'Ois*, livr. XI, pl. 65, fig. I, June, 1821, from the Australian List. The bird called in the Checklist *Megalurus galactotes* (Temm.) will now be called *Megalurus* (*Dulciornis*) *alisteri* Mathews.

Admiral H. Lynes has drawn my attention to the following :—*Cisticola juncidis* Raffles. Distribution Europe, Africa, Asia to Malay Peninsula, Lesser Sunda Islands and Queensland. *Cisticola juncidis* (Raffles) [*Cat. Birds*, VII, p. 259]. *Sylvia juncidis* Rafinesque, *Caratteri alc. nuovi gen. spec. avium Sicilia*, p. 6, spec. 10, 1810 ; Sicilia Distribution, Europe. *Cisticola juncidis normani* Mathews. *Cisticola exilis normani* Mathews, *Austral Av. Rec.*, Vol. II, p. 98 Sept. 24th, 1914 ; Norman River, Gulf of Carpentaria ; distribution, Gulf of Carpentaria (Norman River).

The following change in name is necessary :—For *Porphyrio bellus* Gould, *P.Z.S.* 1840, p. 176, July 1841, read *Porphyrio cyanophalus* Vieillot.

Porphyrio cyanophalus Vieillot, *Nouv. Dict. Hist. Nat.*, Vol. XXVIII, p. 28, May 1819; loc. unknown. Now designated South-west Australia.

Yours etc.,
Gregory M. Mathews.

Foulis Court.
Fair Oak,
Hants, England.
24 Sept., 1926.

Review.

AUSTRALIA'S SONG-BIRDS.

A BOOKLET from the hands of Messrs. A. H. Chisholm and N. W. Cayley, bearing the title *Feathered Minstrels of Australia*, has recently been published in Sydney. It treats of seven species of birds, selected in a haphazard kind of way, and gives a full-page picture of each species and opposite each picture a page of descriptive matter relating to the bird and particularly to its song and notes. The word "minstrel" in the title has been wisely chosen. It will enable attractive species to be included whose notes, however pleasing, could hardly be termed songs.

The pictures give the birds in positions true to life and show the usual excellence that Mr. Cayley—being an ornithologist as well as an artist—is able to put into this kind of work. The letterpress by Mr. Chisholm is obviously the work of one possessing a thorough field knowledge of the birds and in particular a keen appreciation and special knowledge of bird music. It describes the habits, song, and various notes of each bird under notice.

This it is hoped is the first of a series of four booklets. Ornithologists will welcome them as an interesting addition to the bird-literature of Australia, especially as we have many birds of high vocal ability (quite apart from recognised songsters) in whose praise little or nothing has yet been written.

Simmons Limited, Harris St., Sydney, are the publishers.—H. WOLSTENHOLME.

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Mr. A. H. Spencer, bookseller, 86 Bourke Street East, Melbourne, desires to secure Part 2 of Vol 23 of *The Emu*, and also the following plates: 1 and 2 of Vol 1; 10 of Vol. 2; 16 of Vol. 3.

Obituary.

SIR CHARLES RYAN.

THE R.A.O.U. lost one of its most distinguished members when Sir Charles Snodgrass Ryan, K.B.E., C.B., C.M.G., died on 30 October, 1926. Deceased was a foundation member of the Union, and its third President ; he held that office during 1905-07. For his signal services to the Union (including the use, for years, of a room in Collins St., Melbourne), he was subsequently elected an Honorary Member. Two notable addresses given by Sir Charles under the auspices of the R.A.O.U. were published in *The Emu* (Vol. V., p. 110, 1906 ; Vol. vi, p. 95, 1907).

Sir Charles Ryan was one of a syndicate (the others were the late W. H. D. Le Souef and the late Dr. Wm. Snowball), which sent H. G. Barnard in 1896-7 to explore the rich region of Cape York, chiefly in the interests of oology. That expedition produced the eggs, new to science, of the following birds :—*Ptiloris magnificus* (Magnificent Rifle-Bird), *Phonygammus Keraudreni* (Manucode), *Myiagra ruficollis* (Broad-billed Flycatcher), *Machaerirhynchus flaviventer* (Boat-billed Flycatcher), and *Arses lorealis* (Frill-necked Flycatcher), Barnard also first procured a specimen of *Eopsaltria leucops* (White-faced Robin) new for Australia, and discovered *Alectura* (=*Talegallus*) *purpureicollis** (Brush Turkey) and *Ægintha minor*† (Northern Waxbill) both now accepted as good sub-species.

Sir Charles Ryan was born at Longwood, Victoria, 20 September, 1853. He was educated at the Melbourne Grammar School and afterwards studied at the Universities of Edinburgh and Vienna. Sir Charles died under dramatic circumstances. He was returning to Melbourne from a trip abroad (including a visit to Spain and Morocco) and expired suddenly on the Orient liner *Otranto* as the vessel was being berthed in South Australia.

Sir Charles had a distinguished career as a surgeon. During his 47 years connection with the Melbourne Hospitals he served variously from assistant surgeon up to consulting surgeon. In the Russo-Turkish war (1877-8) he was present at the sieges of Plevna and Erzeroum and received six Turkish war medals. He published his experiences in the volume *Under the Red Crescent*. By a singular coincidence, 37 years later, in the Great War, he was on Gallipoli. During an armistice to bury the dead some Turks, noticing Turkish decorations worn by Sir Charles Ryan, literally embraced him. The general, in casually relating the incident to a Melbourne friend, said : " Although they were dirty devils, I accepted the compliment in the spirit in which it was given !"

[A photograph of Sir Charles Ryan is reproduced in *The Emu* for 1907-8, Vol. VII, pl. X.]

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*Le Souëf, *Ibis*, 1898, p. 51.

†Campbell, *Nests and Eggs*, p. 492.

Stray Feathers.

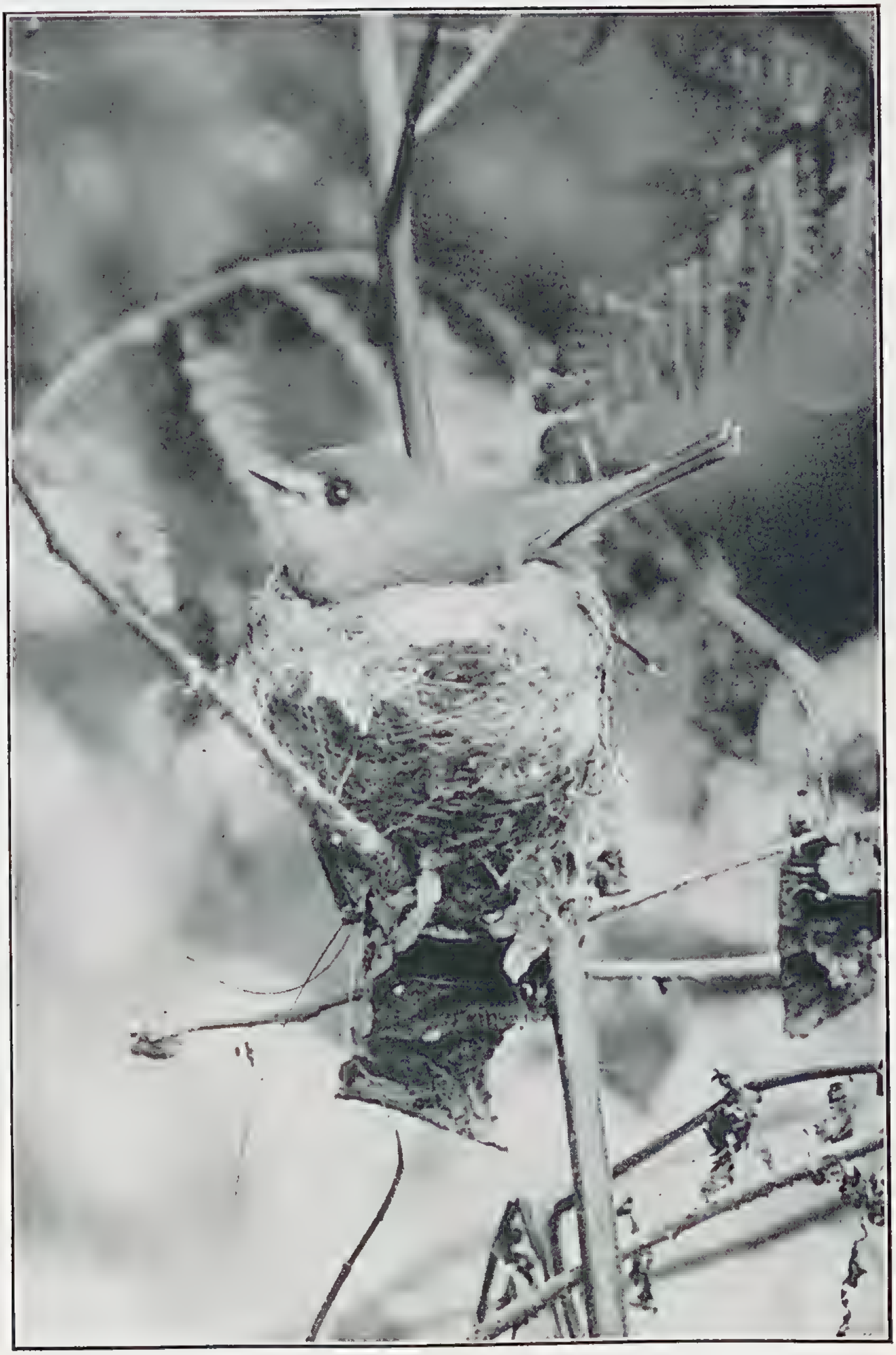
The "Rock-Pebbler."—Can any R.A.O.U. member state the origin of the term Rock-Pebble or Rock-Pebbler, applied to the Black-tailed Parrot (*Polytelis melanuera*) of Australia? Dr. J. A. Leach in *An Australian Bird Book*, gives both these names, also "Smoker." The latter is easily understood, but why "Pebbler?" Is there any similarity in its calls to that of stones knocking together? Dr. Newton often gives the derivation of these popular names, but I can find no reference to *P. melanuera* in his *Dictionary of Birds*.

The query is prompted by Lady Grey's article in *English Life* (October, 1926). It is entitled "The Rook," but notices several other birds tamed by kindness; for the writer, like her husband, Viscount Grey of Fallodon, is noted for her love of all kinds of animals, furred or feathered. Lady Grey is at present engaged in rearing a young "Rock-Pepler" (so spelt), which there is no doubt is our bird, for she gives its other name, the Black-tailed Parrakeet. It was taken from the aviary-nest when in down "with just a hint of lovely orange-coloured feathers showing from the quills." It is fed from its mistress' lips, taking bitten-up brown bread and raspberries, banana and gooseberry pulp, and sometimes biscuit moistened by a bite of a peach, varied with lettuce. The bird has learned to connect its mistress' face with the idea of nourishment, but is somewhat uncertain as to the "point of happy contact," sometimes making a dive for the ear-aperture. It will sway on a rope-neck, making the while a rasping noise with its brilliant persimmon-tinted beak held open.

Mr. A. J. Campbell mentions, in his *Nests and Eggs of Australian Birds*, the curious fact that a Rock-Pebbler in a roomy aviary at Reed-beds (S.A.) reared several clutches of Cockatoo-Parrakeets, which as soon as hatched by their parents were handed over, as if by mutual consent, to the larger bird.—H. STUART DOVE, West Devenport, Tasmania (12/11/26).

* * * *

Birds of Murrayville (Vic.)—There are two amendments I desire to make in my Murrayville Bird List in *The Emu* (Vol. XXV., pp. 293-295). The Red-winged Wren (*Malurus elegans*) is probably not in the Victorian Mallee. I have discussed the subject very fully with Mr. J. A. Ross, and have had the advantage of handling skins of both male and female of *Malurus assimilis*. The error arose partly through a very misleading inconsistency in the descriptions given in Dr. Leach's excellent *Australian Bird Book*. On page 145 of the fifth edition, *M. assimilis* is described as having "chestnut-red patch *inner wing*," whereas on page 219 *M. elegans* is said to have the "*shoulder* chestnut-red." (The *italics* are my own.) I mention this not to shift the blame from myself to the author of one of the most



PALE-YELLOW ROBIN (*Eopsaltria capito*) BROODING

(It is unusual to secure such a fine study of this jungle-loving species. It was recorded by the R.A.O.U. party on the Williams River, which is probably its southern limit. (See p. 191).

Photo. by J. S. P. Ramsay.

valued of my books, but simply to warn any inexperienced observer of pitfalls which await the unwary who put their trust in books alone.

The last bird on my list should be *Neositta pileata*, and not *N. chrysoptera*. Any person who has seen the skins of the two birds together will note how appropriately the former is called the "Black-capped Tree-runner," although "Orange-winged" applies equally well to both species.

There are a few additions which might be made to the recent Mallee lists. On a visit to Ouyen a few weeks ago I noted at the township water reserves several Cormorants. I could not get very near and at the time lacked optical assistance. A solitary large bird I took to be the Black Cormorant (*Phalacrocorax carbo*). Several smaller birds which always fished and flew together appeared to be either White-breasted Cormorants (*P. fuscescens*) or Pied Cormorants (*P. varius*). But the distance made it impossible to note the colour of the skin about the eye or to estimate the length of the bill.

At Boinka West on 19 August I noted a Fantail which I had never seen in the Mallee, and which I took to be the Grey Fantail (*Rhipidura flabellifera*). At the Cowangie railway water reserve on 24 September the White-browed Wood-Swallow (*Artamus superciliosus*) was noted for the first time this season. There were also large numbers of the Dusky Wood-Swallow (*A. cyanopterus*) which had been noted at Linga as early as 18 August, and at Cowangie by the 20th. Apparently associated with the Wood-Swallows was a small flock of the Crimson Chat (*Ephthianura tricolor*). Another visit was paid to the same neighbourhood on 25 September. The ranks of the Wood-Swallows had been reinforced but the Chats had passed on.—(REV.) WALTER WALTERS, Cowangie, Victoria (27/10/26).

* * * *

Notes on Honey-Birds.—The notes on the Crescent Honeyeater (*Phylidonyris pyrrhoptera*) by Mr. D. Dickison in the current *Emu* (Vol. XXVI, p. 120) gave me much pleasure, for we have been surrounded by the species for the past two or three months. The long spell of hot weather last summer must have given them a good breeding-season, for never have I known them to be more plentiful than at present; every garden which can boast of a flowering shrub or two seems to have its pair, and several pairs visit my own "patch."

The attraction here is the Viper's Bugloss, a perennial flowering plant which develops into a large bush and sends up tall spikes of blue florets with extruded pink stamens. There are several large plants here, the best of which has sent up over 70 flowering spikes, which make a great show and invite the Honeyeaters from near and far. The florets must secrete a good deal of nectar, for the birds and bees are at them all day; I hear the cheerful call of the Crescent Honeyeater soon after daylight, and it is almost dusk before the last one leaves. A Bugloss grows just outside one of the sitting-room windows across which a light curtain is drawn; through this one can watch the birds at a distance of a couple of feet or so. It is a pretty sight to witness a Crescent working a spike, progressing upward and spirally somewhat after the manner of a Tree-creeper. The rapidity with which the bill goes from floret to floret is rather astonishing—almost as quickly as one could keep pointing with the finger, and yet in the fraction of a second accorded to each the tongue must be extruded, the nectar swept out, and the tongue brought in again. I do not notice small insects on the Bugloss flowers; indeed, the spring has so far been too cool for them, and the " sweets " must be the attraction to the Honeybirds. Sometimes a Crescent Honeyeater will hang with the feet to one spike while reaching across to dip into another.

Other birds, too, come to these attractive blossoms; yesterday I watched at close quarters a pair of Silvereyes (*Zosterops lateralis*) working the spikes with their tiny bills; they were as quick at it as the Crescents but more irregular in method, sometimes working downward instead of up, and often hanging head down like one of the English Tits (*Parus*). The fine Yellow-throated Honeyeater (*Meliphaga flavigularis*) an old friend here, often visits these flowering shrubs, and sometimes in the early morn I hear the strange calls of the Brush Wattle-Bird, with whom it seems to be a matter of conscience to make his presence known, even while taking an early breakfast!

A pair of White-beards (*Meliornis novae-hollandiæ*) often dash into the garden during the day, and when these tyrants appear everything else has to flee; for the White-beard brooks no rivals on his feeding-ground, and will put to flight birds much larger than himself.

The Crescent Honeyeater is a species which seems to take a great deal of trouble to conceal its nest. Only once did I have the fortune to come across it, and then it was placed about 3 ft. 6 ins. from the ground in a thick growth of small swamp tea-tree (*Melaleuca ericifolia*) to the stems of which the structure was tied with strips of stringybark, of which bark also the nest was constructed. It was cup-shaped, deep, and contained three eggs of a delicate flesh-tint, with a belt towards the apex of pinky-red spots.

I would advise all those who are fond of birds and bees to have a few plants of Bugloss in their gardens; its botanical name is *Echium vulgare*. In a light soil it requires no care or cultivation, going strongly ahead on its own initiative.—H. STUART DOVE, West Devonport, Tasmania.

* * * *

Mr. Maurice Baldwin, of Brisbane, has acquired for his well-kept aviary at Ascot a fine specimen of a Satin Bower-Bird, pure white. This freak recalls the remarkable discovery made near Brisbane some sixty years ago by H. C. Rawnsley—a hybrid between the Satin Bower-Bird and the Regent-Bird. That bird was adjudged by Silvester Diggles to be a " splendid new species " and was named by him *Ptilonorhynchus rawnsleyi*. No other such bird was ever found, and " Rawnsley's Bower-Bird " has long since been definitely regarded as a *lusus naturae*.—A.H.C.

From Magazines.

Egg-Collecting.—Something in the nature of an ornithological sensation has been caused in England over what has become known as "the Crossbill case." Mr. Edgar Chance, well-known because of his published observations on the Cuckoo and the placing of its eggs in other birds' nests, was convicted at a Petty Sessions in Norfolk on a charge of aiding and abetting a farm-bailiff in taking the eggs of a Crossbill, in contravention of the Wild Birds' Protection Act. As a consequence, Mr. Chance was requested by the British Ornithologists' Union to resign his membership of the Union, and it is reported in the *Ibis* that he did so.

Since the publication of the *Ibis* for October, however, Mr. Chance has issued an Open Letter to all members of the B.O.U. In this he states that his resignation had been offered long before the adjudicating committee of the B.O.U., requested him to resign, a fact admitted by the committee under legal pressure. "It may not be generally known," adds Mr. Chance, "that some of the Committee who adjudicated on my case are themselves ardent collectors and have taken quite a number of Crossbills' eggs. But they do not happen to have been summoned for so doing! . . . . Dr. Sydney Long admitted to the Committee that he had himself induced the local man to take a nest of Crossbills' eggs, that he had paid what was undoubtedly an excessive cash consideration for the eggs, and that he had then reported the local man to the Police! It was after such preliminaries that Dr. Long appeared in Court and before the B.O.U. Committee as witness and informer against me! I now understand that a special general meeting of the Union is about to be called on the demand of a number of members who are determined that the matter shall not be allowed to rest until the opinion of the Union has been taken."

* * * *

"Crimes of the Kookaburra."—Some years ago Mr. Donald Macdonald wrote a trenchant article in the Melbourne *Argus* stigmatising the Kookaburra (*Dacelo gigas*) as "a laughing demon" because of the amount of damage it does among small birds. Recently Professor Osborne, of Melbourne University, returned to the charge; he published in the *Argus* of 13 November, 1926, an attack on the Kookaburra under the headings "A Bird of Evil; Crimes of the Kookaburra." In the course of a flamboyant article Professor Osborne referred to the "Laughing Jack" as "a disgusting bird," "a blood-thirsty bully" and various other choice things—all based on the charge that it has killed many bird-babies. Mr. R. T. Littlejohns, press correspondent of the R.A.O.U., wrote to the *Argus* setting out some of the good points of the Kookaburra, and, following an animated controversy, Dr. J. A. Leach wrote a column article in the same journal of 20 November. This article was headed "The Kookaburra; Australia's Favourite Bird," and in it the much-debated bird was acclaimed as one of the most valuable members of our avi-fauna, though it was admitted that "Old Jack" may occasionally cause trouble when he varies his menu. Dr. Leach issues a warning regarding the menace to bird-life created by cats, and concludes his article thus: "The latest effort to dethrone the Kookaburra from his proud position as Australia's favourite bird will undoubtedly prove a boomerang shot. It will develop in Australians the determination to protect to the full the Kookaburra, one of the most famous members of the avi-fauna of Australia."

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Children and Birds.—The following report is abridged from an article in the Hobart *Mercury* (3/11/26):—"A branch of the Gould League of Bird Lovers has recently been formed in Tasmania, and already the membership is representative of many of the State Schools. The State Education Department has sanctioned its formation, and, moreover is supporting the efforts of Mr. G. W. Knight, the head teacher of the Lindesfarne State School, in establishing the organisation throughout the State. It is unfortunate that funds will not permit the issue to the members of a typical Tasmanian certificate, but, for the present, use is being made of the Victorian certificate, which is illuminated with pictures of familiar birds and a photograph of the great John Gould, Australia's pioneer bird-man. . . . . Out of the work of this league may come measures that will ensure the protection of native birds and the education of the community in the value of the birds. Teachers are all interested in the work and assist in nature competitions among the scholars, which are set by officers of the league. A teacher in a country school has great scope if he or she desires to co-operate in this fine work, and has many opportunities for inaugurating a nature-study circle. Bird sanctuaries about the school and the provision of nesting and feeding places go far towards awakening in the child perhaps a lifelong appreciation of all wild life. Tasmania has many beautiful and interesting birds, all of them worthy of study and adequate protection. Towards the accomplishment of better means for their protection, and a changed outlook on nature generally the Gould League in Tasmania bids fair to play a conspicuous part."

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Vanishing Pigeons.—Mr. J. O'Neill Brenan, R.A.O.U., writes in the Brisbane *Daily Mail*:—"Talking of our wild Pigeons the other day, my old friend and one-time official chief, Mr. W. E. Parry-Okeden, mentioned the Flock Pigeon (*Histriophaps histrionica*). He told me that when in charge of the Border Customs patrol, which branch of the department he formed, he arrived one afternoon at some small waterholes. Suddenly the sky darkened, and the next moment thousands of Pigeons came in. They crowded on top of each other, hiding the water from view, and permitted Mr. Okeden and his party to walk in among them. Of course, it is many years since Mr. Parry-Okeden saw what he described, but it is remarkable that, with so many people travelling over the country that should still hold the Flock Pigeon, I never hear of any being seen. The theory is that the stocking of their country with sheep has caused the Flock Pigeons to disappear, but there must be plenty of room yet for them in other parts.

" The ' Squatter ' is also known as the Partridge Pigeon. It used to be fairly common on the Upper Brisbane and the Lockyer, and was plentiful in the neighbourhood of Yeulba, and there were a good many on Baffle Creek. I am told it has disappeared from those parts, but I heard of some on the Dawson. Like the Flock Pigeon, it breeds on the ground and lays two eggs of the same creamy tone. I have seen the young ones, fully fledged, lie to a dog just like a Stubble Quail, allowing themselves to be caught; although described as strictly terrestrial, when flushed it perches or squats on the horizontal branch of a tree. It is the best Pigeon for the table of any that I know, being well flavoured and always tender."

Notes and Comments.

Members of the R.A.O.U. generally will join with Sydney members in extending warm sympathy to the Hon. State Secretary for N.S.W., Mr. N. W. Cayley, whose wife died on 16 January, 1927. Mr. Cayley has for many years been one of the most energetic workers possessed by the R.A.O.U., as well as being a leading ornithological artist, and his wife always rendered him a full measure of co-operation in his work. Two children, aged 5 and 2 years, respectively, remain.

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Mr. W. B. Alexander, M.A., C.F.A.O.U., a vice-president of the R.A.O.U., who returned to England nearly a year ago, went to Canada to attend the Annual Meeting of the American Ornithologists' Union at Ottawa during October. He had a most interesting time there (including a week-end visit to an island in Blue Sea Lake, in the province of Quebec, where he heard the famous demoniacal "laughter" of Loons), and then went to New York in time for the Annual Meeting of the National Association of Audubon Societies.

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Dr. A. Wetmore, assistant secretary of the United States National Museum, merits the congratulations of all members of the R.A.O.U. (of which he is a member) on his election as President of the American Ornithologists' Union. Previous to that election Dr. Wetmore wrote to the R.A.O.U. expressing appreciation of the new Checklist, a copy of which he had just received. " The List," he added, " should prove highly valuable to members of the Union and to others interested in Australian birds. Checklists in themselves are dry reading, but I must confess to having read the Appendix by Mr. Wolstenholme, on the derivation of the scientific names of Australian birds, with great attention. His effort will be highly useful to those who are working actively in other faunas."

A number of congratulatory messages in respect of the Checklist (Second edition) have been received by the R.A.O.U. As an instance, Mr. F. L. Berney, R.A.O.U., of Queensland, after referring to "the immense amount of work its compilation has entailed," says: "I am very glad the compilers have not been drawn into 'splitting,' particularly genus-splitting, which if carried to the extent desired by some writers could only lead to confusion and make in the end a farce of the generic term. The delay in publication has been probably a blessing in disguise, for it has given additional time for research and therefore helped the avoidance of errors. Our new Checklist (badly wanted) has been excellently carried out and is a credit to all concerned. I lift my hat to the Checklist Committee."

* * * *

Mr. A. J. Campbell writes:—Anent the Checklist, a recent reviewer, inadvertently no doubt, omitted a particular point. He was of opinion there was little difference between the Union's Checklist and that by Mr. G. M. Mathews, and therefore the former list, was not required. A national Checklist should be a concensus of opinions of a Committee, not a one-man job. Had the Union's Checklist not appeared, there is little doubt that Mr. Mathews' list in many items would have differed. He was a member of the R.A.O.U. Checklist Committee (that was the point omitted by the reviewer), and kept in touch with its inner workings and several times modified his views to conform with those of the Committee. One instance may be cited. For the Flame Robin, Mr. Mathews adopted *Littlera chrysoptera* (his Checklist, 1913), but on the considered evidence of the whole committee he at once changed the specific name to *phœnicea*. There are also several instances where he raised his subspecies to a full species.

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The Sydney Congress.—The sessions of the annual Congress (1926) of the R.A.O.U. were the best ever held in the State, thanks to local members and the untiring energy of the Hon. State Secretary, Mr. N. W. Cayley. More time than usual was devoted to business—serious business—than to the pleasures, although the reception by the Deputy Lord Mayor was a happy and important beginning.

Members were made at home at the Australian Museum, where they were welcomed by Dr. Chas. Anderson on behalf of the trustees and the staff. Probably more time could have been devoted to the ornithological collections (notably the recently acquired "Robert Grant Collection"). The method of reference has been much improved by the card-index system, whereby any specimen required can be turned up with the least possible trouble. All exhibits were in first-class condition.

The all-day trip to the National Park under the leadership and hospitality of Mr. Frank Farnell (Chairman of the Trust) was a red-letter day, both for enjoyment and instruction. A visiting member believed that one of the by-laws for regulating the Park needed amending, and should read :—" No person shall be allowed to hunt or disturb the native or introduced birds or animals in the park, *except domestic cats gone wild.*" If native birds are to be adequately protected, no scheme anywhere will be complete without a war of extermination of wild domestic cats, which are now over-running reserved and open country alike.—A. J. CAMPBELL, Melbourne.

* * * *

Aviculture in Australia.—Mr. G. A. Heumann, R.A.O.U., Beecroft, Sydney, wrote to the annual Congress of the Union complaining that in N.S.W. *bona fide* aviculturists " are absolutely prevented by law from studying birds in confinement." Criticising "the fossilised official attitude," Mr. Heumann said : " I have a permit granted by the Administrator of the Northern Territory for some Finches and a few pair of Parrakeets. Some of these I wished to keep for observation and breeding purposes in my own aviaries ; for a few others I have an export permit granted me by the Federal authorities on behalf of Lord Tavistock. Applying for a permit to land these birds in Sydney, to my utter surprise this was refused, and my representative was told if we attempted to land them, they would be seized by the police. All these birds may be landed in any other State, but the Zoological Gardens having wished at the time to create an exchange or trade monopoly for themselves, this astonishing, not to say stupid, regulation was formed. The last Darwin steamer brought a huge consignment of these birds to the Zoological Gardens here, and another big consignment to a private dealer in Melbourne ; and yet here, in N.S.W., a private person cannot import one bird without making a criminal of himself. . . . . I have bred in captivity most of the Australian Parrakeets and Finches—to mention amongst the rarer species Yellow-rump Finches, Princess Alexandra, Bourke, and Turquoisine Parrots."

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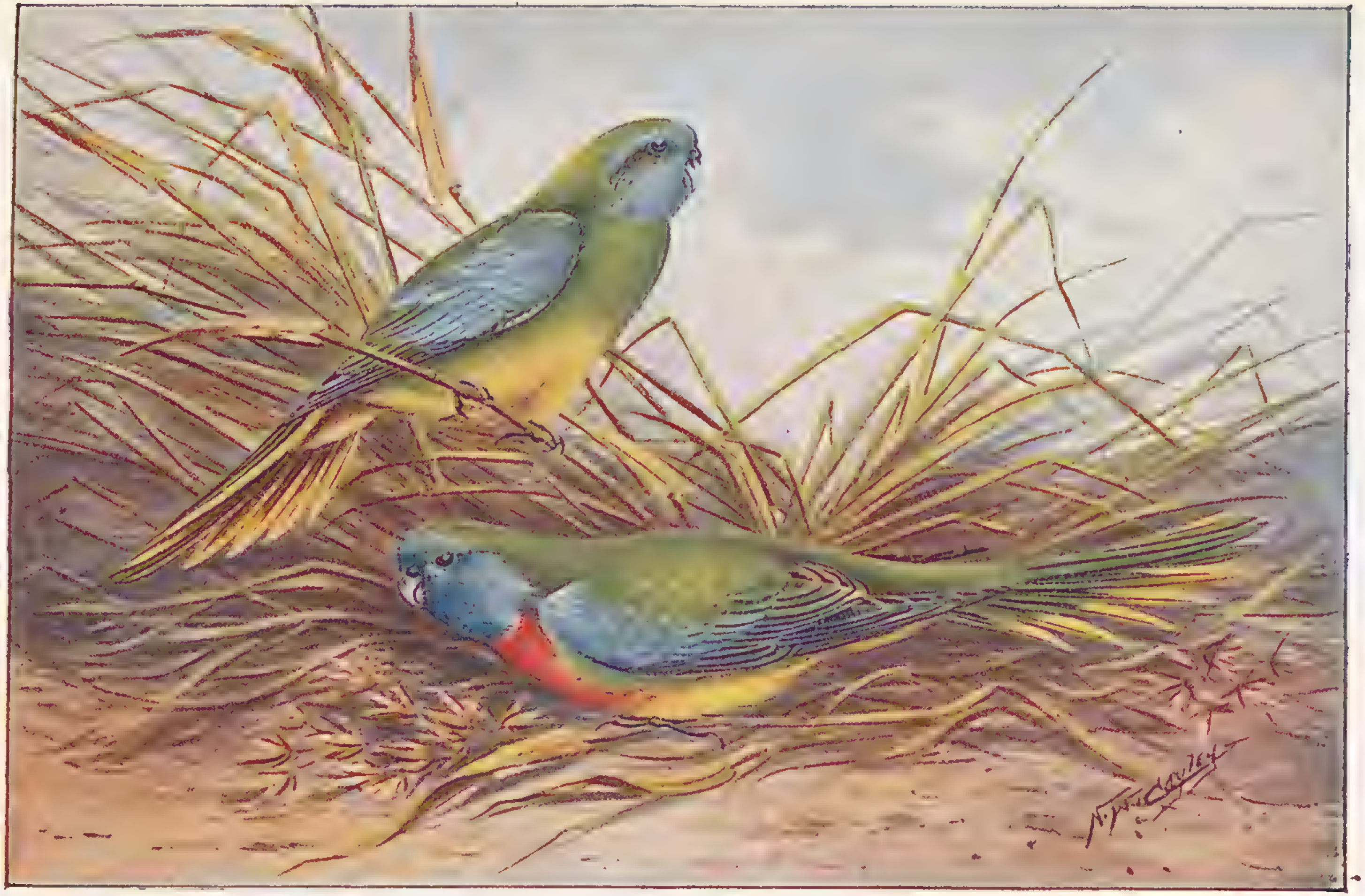
PLATE 34.



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SCARLET-CHESTED PARROT.

Neophema Splendida.

From a painting by Neville W. Cayley, R.A.O.U.

The Emu

OFFICIAL ORGAN OF THE
ROYAL AUSTRALASIAN ORNITHOLOGISTS' UNION

"Birds of a Feather."

VOL. XXVI.] APRIL, 1927. [Part 4.

The Scarlet-chested Parrot.

BY A. H. CHISHOLM, Sydney.

PLEASURE will be felt by all bird-lovers when apprised of the fact that the radiant Scarlet-chested Parrot (*Neophema splendida*), one of the rarest and most beautiful of birds, has been chanced upon in New South Wales, at a much more easterly point than previously recorded.

This lovely species (see coloured plate) is the least-known of the seven brilliant little birds contained in the genus *Neophema*. Its remarkable shyness and secluded habitat serve in part to excuse our lack of knowledge; but a more potent factor is that its numbers have apparently always been scanty. Most of the Grass and Ground Parrots of Australia that are now, alas! so sadly decimated, were once abundant. Not so, in the history of white men, with the charming little Scarlet-chest. Gould's original description of the bird, in 1840, was taken from a specimen sent to him from the Swan River, and five years later Drummond, working near Moore's River (also in West Australia), secured for him several specimens. Drummond was killed by blacks without giving Gould any field-notes on the species, and not another record of the bird has been made in W.A. since that day, over 80 years ago!

The latest South Australian example was taken by E. L. Troughton and J. H. Wright, of the Australian Museum (Sydney) in October, 1921, some thirty miles east of Ooldea. It is said by Mr. Wright (speaking from memory) to have been one of a small company which apparently had been breeding in the locality.

The second N.S.W. record was made a few months ago. A black-and-white drawing of the species, by N. W. Cayley, appeared in the *Sydney Mail*, and this decided for a man who had been visiting the north of the State the identity of a small Parrot which he had casually shot a few days before, and which was a stranger to local residents. The locality was only about 100 miles from the coast. Obviously, a small company of the beautiful nomads had been driven in by a severe drought; at about the same time the vanishing Paradise Parrot was also noted for the first time in eastern N.S.W. (See below).

It is heartening to know that Gould's Splendid Parrot is still with us—that small companies are persisting in odd corners, even in N.S.W. But the grim fact remains that the species is one of at least six brilliant Australian Parrots that are bordering on extinction. Can they be saved? This is one of the most important questions facing Australian zoologists today.

Travelling Paradise Parrots.—Between five and six o'clock in the morning of 21st Nov., 1926, I heard excited, whistling parrot notes, with an occasional parrot call, entirely new to me, and my sister called that from her window she could see some strange birds resting on a pepper-tree. Going out to look at them through the glasses, I found five Paradise Parrots sitting close together on the highest branches. Owing to the severity of the drought most of the leaves had fallen from the top of the tree, and every bird could be seen very plainly. Evidently they had been travelling (probably by night, as is often the way of Parrots), and were resting; they must have been tired, for they took no notice of me. There were three female birds and two males, and from the colouring I concluded they were an old pair with three of that season's young.

On that drought-stricken morning, with a heavy haze of smoke hanging over everything, the birds on the dried-up tree, with their wonderful colouring, made a picture not easy to forget. One male bird, in particular, was especially beautiful. He was sitting on a bough above the others, and looked as though he had a little tight cap on. They rested there for ten minutes or more, occasionally preening their feathers, and all whistling continuously, as though lost. Then two flew to the parched ground, searching over it for food. The other three pottered about the tree, sometimes hanging upside down, nibbling at the half-dead leaves, meanwhile uttering parrot-like notes and an occasional whistle. Then, suddenly, as at a signal, all flew, and for half an hour or so we could hear them calling from some trees where they had settled in the distance.—FLORENCE M. IRBY, Narrango, Casino, N.S.W. (26/2/27).

[The Paradise Parrot (*Psephotus pulcherrimus*), also known as the Beautiful Parrot, Scarlet-shouldered Parrot, Ant-hill Parrot, and Ground Rosella, one of the most graceful and beautiful of the world's birds (see *Emu*, Vol. 24, pte. 14, for coloured plate), was once fairly abundant in Queensland and (possibly) the north of N.S.W. Unfortunately, its numbers were so decimated that the species became lost to ornithological knowledge during the present century, until it was re-discovered in the Burnett country (Q.) in 1921 by C. H. H. Jerrard (see *Emu*, Vol. 22, pp. 4-17). A meeting with the bird in the same locality was reported by A. H. Chisholm in 1924 (*Emu*, Vol. 24, pp. 25-32). No further report has been published, but information received points to the possibility of small companies trying bravely to re-establish their species in remote corners of Queensland. Miss Irby's record, stated above, appears to be the first for N.S.W. The fact that the bird was reported in southern Queensland many years ago made it evident that the north of N.S.W. ("ant-hill" areas) was also favored, but A. J. North was unsuccessful in all his efforts to discover the species in N.S.W. It would appear that small companies have persisted in the wild country immediately west of the Northern Rivers.—EDITOR.]

Birds of Kapiti Island.

BY A. S. WILKINSON, R.A.O.U., Kapiti Island, New Zealand.

ABOUT an hour after leaving the city of Wellington, the traveller by the northern Manawatu train comes within sight of the stormy waters of Cook Strait. When the train reaches the summit of the hill overlooking Pukerua Bay, there can be seen, about 12 miles away, a rather mountainous island, often overhung by a bank of clouds. Kapiti has the appearance of being much greater in extent than it really is.

The island is oblong in shape, about 6 miles in length and 1½ in width, and the total area is 4990 acres. It lies almost north and south parallel with the adjacent mainland, from the nearest point of which it is about 4 miles distant. About two-thirds of the island is covered with bush, very dense in some of the gullies, with manuka (*Leptospermum*) on the ridges, where the vegetation is more open. Part of the balance is open grass land and the remainder grass interspersed with manuka and tauhinu (*Cassinia leptophylla*).

Both ends of the island are devoid of bush. On the western side facing the open sea there are huge cliffs, in some places 1000 feet high. It is here that the highest point on the island is reached, an altitude of 1725 feet. On this side there is no vegetation excepting an odd tree and some tauhinu. Where once grew beautiful shrubs and trees there now remain rocky, broken slopes, which are rapidly weathering away. A great amount of the desolation can be attributed to wild goats, the progeny of those which were liberated 80 or 90 years ago by whalers, and which have over-run the island ever since. By eating the undergrowth, chewing the bark, climbing some of the trees after leaves and young shoots, and starting avalanches of broken rock rolling down the cliffs, these animals have caused great damage to the trees, which in places have been killed. Even if the trees had withstood the damage done in the first place by goats, they must have succumbed once the undergrowth was gone from these wind-swept, precipitous faces.

On Kapiti other animals, too, have helped to destroy the trees in different parts. At times wild cattle, pigs and sheep have been roaming over the island. The so-called opossum (*Trichosurus vulpecula*) was liberated, and wild cats are occasionally met with; 15 of these brutes have been shot during my residence here. Rats (*Mus decumbus*) are also fairly numerous. There now remain less than a dozen goats, some sheep, and the smaller animals already mentioned.

On the side of the island facing the mainland the slopes are nearly all covered with bush from the summit to the sea, and all of the trees provide food of some description for the different species of birds. Kapiti is watered by numerous small creeks which flow across from west to east. Nearly all of these streams enter the sea through gorges, which extend inland for about ¼ of a mile. Some of the gorges are so rough and precipitous that they cannot be traversed without difficulty. In one of the streams where it discharges is a waterfall 30 feet high.

The Crown portion of the island was acquired from the Maoris by the New Zealand Government about 25 years ago as a sanctuary to preserve the indigenous fauna and flora. With the exception of a small piece of some 20 acres on the eastern side near the caretaker's residence and something like 800 or 900 acres of Maori land situated at the north end, belonging to Mr. and Mrs. Webber, who reside there with their family, the whole island is under Government jurisdiction. The sanctuary is under the direct control of the Lands Department, and an Advisory Board, consisting of 8 members, the majority of whom are scientific gentlemen, was appointed some years ago to advise the Government on matters relating to the welfare of the sanctuary.

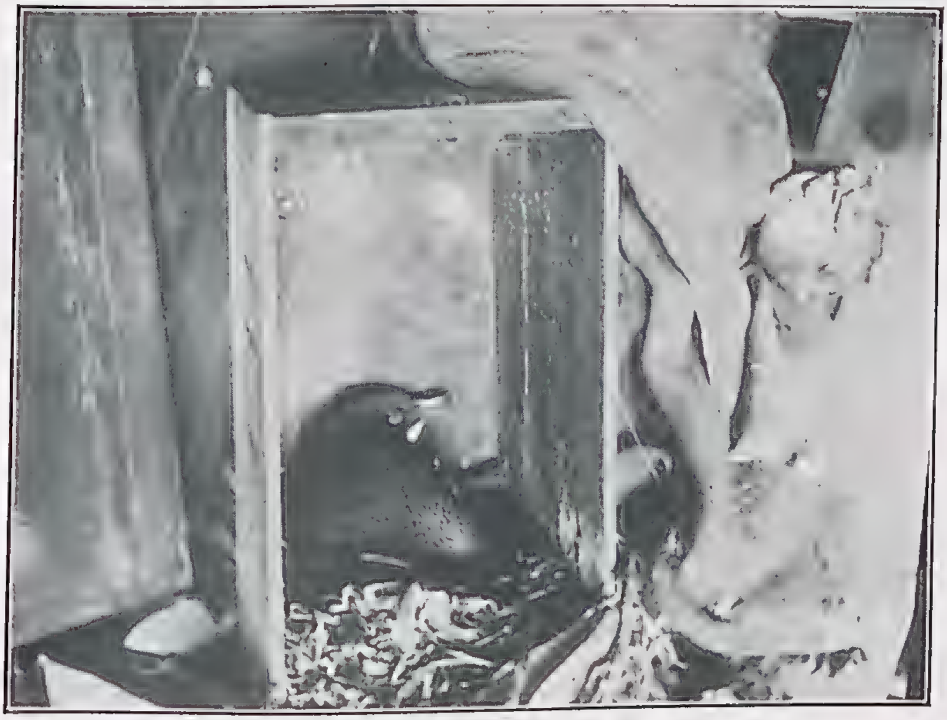
On the native land at the north end is a small lake of about 6 acres in extent, and this is the only expanse of enclosed water on the island. When the shooting season opens, Ducks (*Anas superciliosa*) fly across from the mainland in huge flocks to this small lake. The Stilt (*Himantopus leucocephalus*) resorts there for the purpose of breeding. The Banded Dotterel (*Charadrius bicintus*) also frequents the shores of this lagoon.

Besides the main island of Kapiti there are 3 small islets, averaging about 2 acres in extent. They are called Tokomapuna, Metungarara and Tahoramaurea. The first-named is about 70 chains and the others about 18 chains distant from the main island.

The old time Maoris attached much importance to Kapiti and it was considered by them to possess great mana. Te Rauparaha, one of the cleverest fighting chiefs, when on a raid with the other northern chiefs about the year 1817, was so struck with Kapiti that he formed the design of taking possession of it.

In the days when whaling was at its zenith in New Zealand, Kapiti was one of the important stations, there being no less than 4 stations on the main island and 2 on the small adjacent islets. Traces of those exciting times can still be seen on the sites of the different stations, in the shape of old trying-out pots, whale bones, old stone fireplaces, and, on Tokomapuna, an old cannon.

As a sanctuary, Kapiti is admirably situated, being placed about the centre of the Dominion, within easy distance of the large forest reserves on the mainland, which are also sanctuaries. The surplus birds of the stronger flying species breed on Kapiti and probably fly across and help to replenish the bird life in the mainland reserves. Natural protection is afforded by the elements. As it is nearly always blowing, with consequent rough seas and hardly any shelter, yachting parties do not frequent this portion of Cook Strait. Although there is a charted anchorage at the south-east corner of Kapiti, it



PENGUIN (*Eudytula minor*) IN A BOAT-SHED, KAPITI ISLAND.

Photo. by A. S. Wilkinson.

VIEW OF KAPITI ISLAND FROM OLAKI, 12 MILES AWAY. LEANING STICK IN FOREGROUND IS MAST OF SHIP "CITY OF AUCKLAND," WRECKED 22ND OCTOBER, 1878.

Photographer unknown.

provides shelter only from westerly and nor' west winds. Fishermen keep their boats there, but they have proper moorings down.

When all the introduced animals on Kapiti are destroyed, and the open grass areas are planted with native trees, the sanctuary will not only be capable of supporting a much greater number of birds, but in time will become a unique botanical museum.

For assistance in the preparation of this paper I have to thank my esteemed friend, Mr. R. H. D. Stidolph, Vice-President R.A.O.U., of Masterton. I am also indebted to Mr. Webber, of Kapiti, for information relating to some of the species. Lastly, thanks are due to my wife for assistance, and more especially for obtaining photographs of some of the birds.

NOTES ON THE BIRDS.

Grey Warbler (*Gerygone igata*).—This charming little bird is rare on Kapiti. It seems to me to be much smaller than the mainland Warbler, and it certainly does not warble like those of the Tararua Mountains and the Wairarapa. Although I have seen the bird perhaps a dozen times in 18 months, I have heard it warble on only two occasions. Even then only a note or two was heard. Usually, with this species, the first indication of its presence is the song. We have found only one nest (empty) of this bird. It was situated in a thick, low-growing scrub (*Pennantia corymbosa*) about 5 feet from the ground, and differed in size, shape and structure from any other Warbler's nest that I have seen. It was perfectly round, and built of fine roots, small vines, some manuka (*Leptospermum*) bark, and lined with fine grass; it measured 5½ inches in diameter. The entrance to the nest was 1¼ inches in diameter and was situated on the side, 1½ inches from the top. The nest was a new one, and so far as I could see had not been used.

North Island Tomtit (*Myiomoira toitoi*).—One of the most engaging of our birds. Each pair appear to have their own locality and live about that particular spot all the year round. If the nest is not destroyed, or eggs taken, the birds will breed in close proximity to the site of the previous season's operations. I know of two instances in which these birds built what may almost be termed double nests. In one case the nest (the old and the new) were within six inches of each other, and in the other instance only a small branch separated the nests. Most of the nests have been in hollow spouts of the mahoe (*Melicytus ramiflorus*) and from 4 to 10 feet from the ground. One was situated in the top of a dead tree fern (*Cyathea medullaris*) 5 feet high. Another was placed right on the ground, beside a rock. Of 8 nests, found in the season 1925-26, only one produced young birds. The eggs in the nest were all destroyed, either by rats or more probably by the parasitic Long-tailed Cuckoo (*Urodynamis taitensis*), as that bird was very plentiful during the nesting season, and I know that it will take both eggs and young birds.

The Tomtit's nest is probably the cosiest of any built by the native birds. All that I have seen were made of the same material, consisting mainly of moss, with some fine roots of grass, a few leaf skeletons, a feather or two and spider webs. This little bird possesses very keen eyesight and can detect minute grubs a considerable distance away. A few weeks ago while digging in my garden I noticed one of these birds on a post, intently watching the operations. At last he detected a grub and flew down almost at my feet to secure it, and returned to the same post to eat the morsel. I afterwards measured the distance from the post to where he secured the insect, and found it to be 14 feet 4 inches.

The sexes are very devoted to each other, and the male will gather grubs for his mate all day. While he is much about the garden the female will seldom show herself. The bird shown in the photograph comes regularly to the garden to be fed, and so tame has he become that he will take grubs out of our hands.

North Island Robin (*Miro longipes*).—This Robin is now very rare on the mainland. If it is to be seen at all it is only in one or two isolated districts. On Kapiti it is holding its own and increasing in numbers a little, notwithstanding the nefarious attentions of the Long-tailed Cuckoo. The nesting operations of the Robin were disappointing. Out of 10 nests noted last season, only 3 produced any young birds. In one of the successful nests the young birds were ready to leave the nest when the Cuckoo arrived on the island. Robins are like Tomtits, in that each pair have their own particular domain and very seldom are there more than two birds in that area. They are always to be seen about certain places throughout the year. One has only to scratch away a few leaves to entice them on to the ground, where, provided no sudden movement or noise is made, the birds will feed for some time. I have seen them within a few inches of my wife when she was feeding them with grubs. They are fond of bread crumbs, and when their hunger is satisfied will hide the remaining crumbs in hollow branches and crevices of trees.

Much has been written about the songs of the North Island and South Island Robins. I have worked in the South Island at bush-felling where *Miro albifrons* was one of the common birds, and I had opportunities of hearing the song perhaps denied to others. Though certainly singing most beautifully, its song hardly comes up to that of the North Island Robin. On a fine morning after rain I have heard *Miro longipes* singing in the bush behind our cottage for half an hour without ceasing, pouring forth an astonishing variety of notes.

Situations similar to those used by the Tomtit suit this bird for nidification purposes. Nests have been found on the ground, at the foot of a manuka tree, and in hollow trees from 3 feet to the top of a tree 30 feet from the ground. Generally, however, they seem to prefer the side of a tree from which a limb has been torn, leaving a cavity for the intended structure. One nest that I saw was built against the side of a tree that had been split down the centre, leaving a vertical hollow. In this instance a foundation 12 inches high had been built of manuka twigs in the hollow, and the nest placed on top. Why should the birds have gone to all this trouble when there were several apparently more suitable trees close by? This nest was about 8 feet above a much-used track.

Another nest was placed on a ledge of rock alongside a track that was used every day (at that time) by an opossum trapper. Attention was drawn to the nest, situated on the ground at the foot of the manuka, by the distress signal shown by the Robins in their attempt to lure the intruders away. The nest was no more than glanced at for fear of unnecessarily distressing the Robins, and no examination was made. Sufficient was seen, however, to know that in the nest were nearly fully-fledged young birds. The next day being ideal for photographic purposes, my wife visited the nest, but was horrified to find it destroyed, probably by Wekas.

Another nest was in a kokekohe (*Dysoxylum spectabile*) 15 feet from the ground, where the wind had torn off a limb, leaving a cavity 5 inches wide, about the same in depth, and 15 inches high. When discovered, the female was on the nest, and although I was within 2 feet of her she showed no signs of fear. I watched the bird for about 5 minutes, hoping she would let me have a peep at the eggs, but this pleasure was denied me. The site was visited again next day, and this time the Robin was absent, though both birds were nearby. In the nest were 2 creamy-white eggs, covered all over, except the extreme point of the larger end, with purplish-brown specks and blotches. Round the larger end the markings were closer together, forming an indistinct band. Both eggs were alike in colour, but differed slightly in size. One measured 23 x 19 mm. and the other 23 x 17.

The nest measured 5 inches across the top, with a cup 2½ inches in diameter by 1½ inches deep. It was built of very fine twigs and some moss, and the rim was held together by spider webs. The following day an attempt was made to obtain a photograph of the nest and eggs, but again the bird declined to leave her nest, in spite of the fact that the camera was set up only 3 feet away. When I started to climb down the tree the female Robin left her eggs and, flying about close to my head, used every means in her power to hasten my departure. On my reaching the ground she returned to the nest. The male bird showed no sign of uneasiness during the commotion, and did not leave the ground where he was turning over leaves in search of insects. A few days later another visit was paid, and the nest was found to contain only one egg. On the following day this egg had also disappeared and both birds were near the tree, looking very miserable.

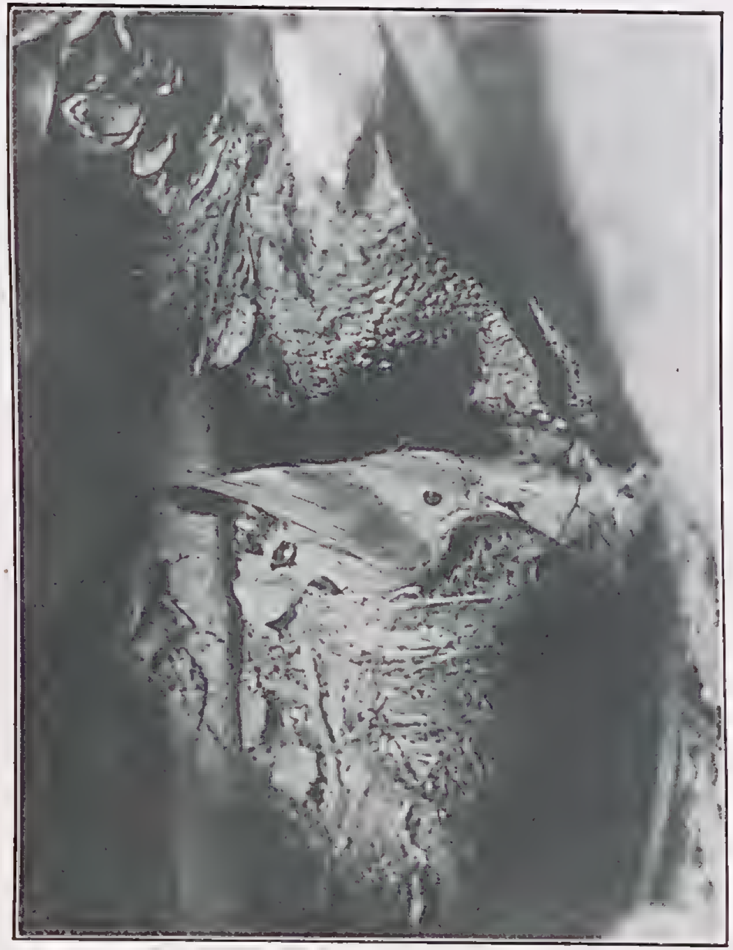
Failing in our attempts to obtain a photograph, we tried the one discovered by the opossum trappers, with more success. On our approaching the site the female immediately left the nest, disclosing 2 eggs, which differed a little in size and colour from those previously mentioned. The nest was also larger. It was on a ledge of rock 3 feet above a narrow track, and the rock was covered with the creeping succulent herb (*Peperomia Urvilleana*) which almost hid the nest from view. It was built of small sprigs of manuka, small twigs of *Olearia Forsteri*, manuka bark, moss and spider webs. The eggs were greyish-white with brownish spots very much thicker towards the larger end, where they formed a distinct zone. They were both the same size and measured 24 x 18 mm.

Grey Fantail (*Rhipidura flabellifera*).—This Fantail cannot by any means be deemed plentiful on Kapiti—perhaps one pair to 10 acres would be a fair estimate. Neither are they so tame as those inhabiting the mainland, although they will take no notice of an intruder when they are building. It is quite a common thing to see them in different parts of the country at this time of the year (April) entering dwellings and feeding on house flies. They have never since we came to Kapiti been either inside or on our house, perhaps because we have no house-flies on Kapiti.

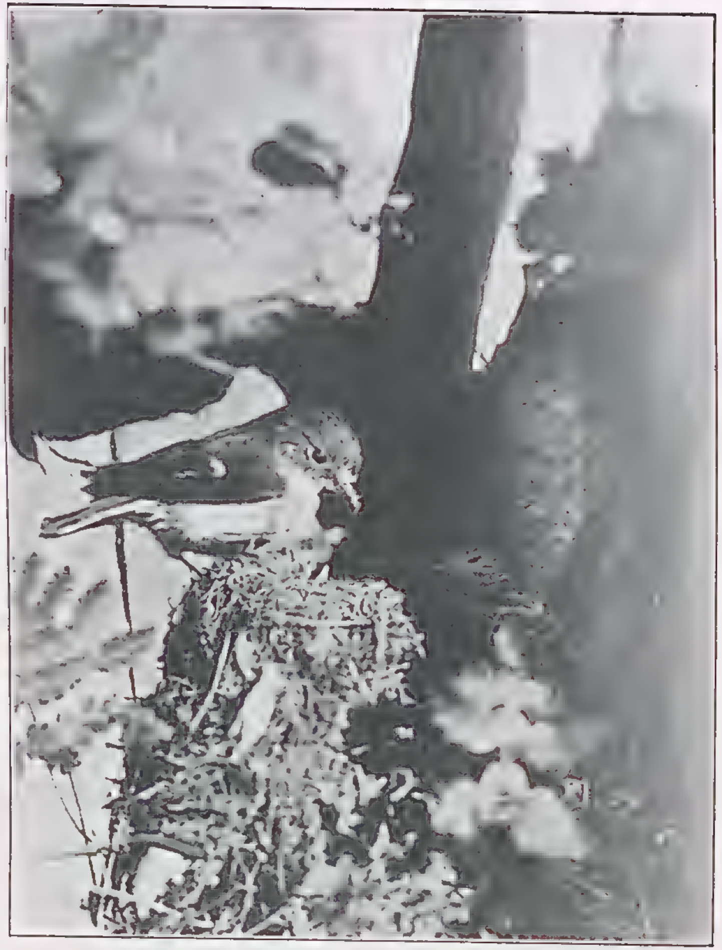
A pair of Fantails started building within a chain of our dwelling. They put in all one day working on a foundation made of small, decayed pieces of wood fastened together by spider webs; then for some unknown reason they left it. They next started operations in a karaka tree (*Corynocarpus laevigata*) about 2 chains further in the bush and about 7 feet from the ground. Both birds were working industriously and with the same materials as before. A day was spent on the new nest, which was then discarded for another site on the same branch, but 2 feet nearer the trunk of the tree. In two days time the nest was finished. On the second day it was noticed that as each bird carried its share of material it sat on the nest, and, using its body for a mould, placed the nesting material in the desired position; then, moving gently round and round, occasionally pressing the material down with its chin, gradually built up the rim of the nest. Eggs were laid and the little bird started sitting. Everything went well until the eighth day, when the nest appeared to be deserted. Investigation proved this to be the case, for the nest was empty.

Nothing daunted, the brave little pair made another attempt, about a quarter of a mile away from the robbed nest. The site chosen this time was on a small tree, *Olearia Forsteri*, growing from a rock. Getting busily to work, they soon had the nest completed. Three eggs were laid and incubation commenced. When the nest was next visited three lusty young Fantails had appeared to reward the devoted little couple.

Another pair were noticed carrying materials to a small rangiora (*Brachyglottis rangiora*), a large-leaved shrub much favoured by the Fantail for nesting purposes in many parts of the country. They started the nest in a fork of the shrub, the limbs of which at this spot were only an inch in diameter. Although I was within two yards of the nest, the birds took not the slightest notice—both were working as though their lives depended on its completion. In a couple of days the nest was finished, but it was 5 days later before the first egg was noticed. Next day the nest was empty. Coming down a bush track I noticed a pair of Fantails flying about almost on the ground in a state of great excitement. On ascertaining the cause, I found



NORTH ISLAND ROBIN (FEMALE) INCUBATING.



NORTH ISLAND TOMTIT (FEMALE) AT NEST.

Photos. by A. S. Wilkinson.

NATIONAL MUSEUM [illegible]

that a young Fantail was caught by a species of cutting grass, with hook-like seed heads (*Uncinia riparia*). My timely arrival saved the bird from death.

Black Fantail (*Rhipidura fuliginosa*).—This species is found mostly in the South Island. On the 18th December, 1925, one was noticed near my cottage. The bird seemed very hungry, as it was hawking for flies all the time it was under observation. Several Grey Fantails were in the vicinity, but they seemed dubious about getting too close to the stranger. As wind had been blowing for several days from the south-west, perhaps it had come over then, or it might have been about for some time and escaped notice. Another Black Fantail, probably the same one, has been seen on several occasions since.

Saddleback (*Creadion carunculatus*).—This rare and interesting species was transferred to Kapiti from one of the northern sanctuaries. On the sanctuary where caught they seemed to be always in pairs. If they became separated while feeding they would call to one another every few minutes. They possess a beautiful, flute-like note, which can be heard for a considerable distance. Although you may have a good idea of the whereabouts of the Saddleback, sometimes they are hard to find as they seldom remain long in one place. The male appears to be the noisier, and many times I heard him call to his mate and receive no answer, whereas if the female called he would immediately reply by uttering several notes. If the female was caught first the other bird would start calling and hopping about from branch to branch, exhibiting every sign of distress. On one occasion he came within a yard or so of the bird-catcher in his excitement, until he, too, was caught. A pair were captured like this in about two minutes. Sometimes the female was taken when her mate was a few yards distant and he did not see her, in which case he would haunt that locality for some time, incessantly calling. But if the male was the first bird captured the female usually flew or hopped away some distance, returning every now and again to the scene of the capture, and kept calling for a day or so.

So much are the sexes attached to each other that in one instance this devotion led to a tragedy. As we caught the birds we placed them in a small aviary erected for the purpose a few yards from our camp. Moreporks (*Spiloglaux novae-seelandiae*) discovered this, so it was necessary to cover the aviary with a blanket to prevent the birds being pulled through the netting. After a male Saddleback had been caught and transferred to the aviary, a female was seen a few hours later hopping about; but being very suspicious she would not allow us within reach, so we could not catch her. The same evening, when we went to cover the aviary as usual (it had been raining hard in the afternoon and the blanket was over the top and one end to keep the birds dry), and when I caught hold of the cover to fix it securely, the female bird that had haunted the locality during that day flew from under the blanket. She must have been sitting on the end of one of the perches that projected through the netting. Unfortunately, as the bird flew out a Morepork swooped down like a flash, caught the bird, and flew into a nearby gully.

The Saddlebacks feed largely on that repulsive insect known to the Maoris as the weta (*Deinacrida armigne*). They dig this insect out with their powerful beaks from holes and cracks in trees. While eating it the bird holds the insect down with its feet. I once saw one of these birds holding a weta in its claw, parrot fashion. On another occasion I noticed a female trying to get an insect out of a crevice in a branch. She seemed to have a difficulty in reaching it, and whether she called her mate (who was about 6 feet away) or not I cannot say, but he hopped along to where she was and between them they secured a large weta, which was immediately seized and torn to pieces by the female.

Only once have I seen Saddlebacks sitting still for any length of time. Two were sitting on a branch side by side, preening their feathers and having a general brush-up. When the toilet was completed the female looked at her mate, and he then hopped away from her until about 3 feet separated them. He then started hopping towards her in very short hops, and every time he moved he bowed to his partner, leaning over first on one side and then on the other of the branch. In bowing he would lean right over until he was almost hanging by his feet. As he got closer to the female the hops got shorter until he was about a foot from her, when he started a low song of exquisite sweetness, somewhat resembling the song occasionally given by the Silvereye (*Zosterops lateralis*). To hear the love-song of the Saddleback as I heard it one has to be very close, yet out of sight of the birds, and keep perfectly still. All the time the male bird was paying his devotions to his lady she never once took her eyes off him. When this most interesting display was over the birds again went on feeding. From the time when I first saw the birds preening their feathers until the termination of the courting song, perhaps 10 minutes had elapsed.

The Saddleback obtains a great deal of its food off the ground, and this has no doubt been the cause of its extirpation on the mainland. They are inquisitive birds and any animal moving about on the ground is closely scrutinised, so that wild cats would have no difficulty in catching one.

No authentic nesting details can be given, as I never saw a bird on a nest. Several nests were found which might have been made by this bird, as they were unlike any other nest with which I am acquainted unless they showed a resemblance to those of the Tui (*Prosthemadera novae-seelandiae*). They were, however, about 2 inches less in diameter than the nest of that bird, and not quite so deep. The nests were all built of twigs of the manuka (*Leptospermum*) and two of them were lined with the bark of the ribbon-wood (*Moheria pupulnea*). One day I saw a female tearing strips of bark off the ribbon-wood, and although she made several journeys to this tree I could not discover where she was taking it. The nests were in different kinds of trees; while some were low down in manuka, others were 20 feet above ground.

I have not seen one of these birds fly very far, but the distance they can hop and the ground they can cover by this means is astonishing

I have seen the Blue-wattled Crow (*Calleas wilsoni*) moving through the bush, and although it can hop a surprisingly long way it would have to move quickly to keep ahead of the Saddleback. Behind the house on Kapiti I saw, a few weeks ago, a Saddleback fly across from one tree to another about 2 chains ; this is the longest flight I have seen this bird make. When flying they seem as if they are going to fall headlong. Their flight resembles in this respect that of the Whitehead (*Certhiparus albicilla*).

Since they were liberated on this sanctuary they have been seen regularly, but I never until a few weeks ago saw a pair together. On the 28th December last Tuku Webber told me that he had noticed two Saddlebacks near his home and that one bird was feeding the other. This naturally excited my curiosity, and I felt sure that they were a breeding pair and perhaps had a nest. I spent some time in that locality hunting for the nest, but without success. However, they must have had one about that time, for a pair were seen in the same locality on the 4th April last feeding a nearly full-grown youngster. We had gone to this bay for a picnic, and while the billy was boiling I strolled along to where the birds were usually seen, when I was delighted not only to see a pair but also to know that the birds had bred.

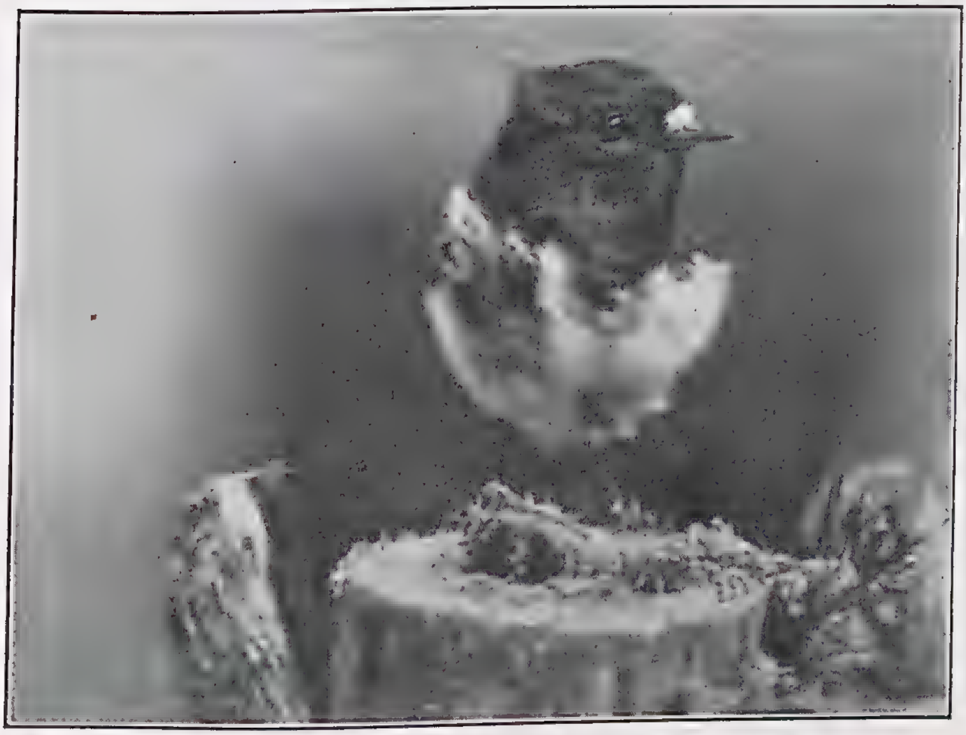
Whitehead (*Certhiparus albicilla*).—This is the commonest bird on Kapiti and certainly the noisiest. Although I always thought Whiteheads to be purely insectivorous, I have noticed that they occasionally feed on berries, especially those of the mahoe (*Melicytus ramiflorus*). The bird can be seen everywhere, especially on the low, scrubby tauhinu (*Cassinia leptophylla*), which in some parts grows only about 6 feet high. For nesting places they seem to prefer thick-growing, small-leaved shrubs such as the manuka (*Leptospermum*), daisy tree (*Olearia Solandri*), and *Coprosma areolata*. Most of the nests that I have seen have been about 6 feet from the ground, though I have seen one in a mahoe 18 feet high.

They, too, like some of the preceding species, had a considerable number of disappointments last season in their domestic affairs. Eight nests were known but only one was successful. This bird is the principal victim on Kapiti of the Long-tailed Cuckoo (*Urodynamis taitensis*), and is the only one that we have seen feeding this parasite. On the 21st February, 1925, a Whitehead's nest was found in a *Coprosma areolata* about 10 feet from the ground. I climbed very near to the nest, but as the shrub was too frail to bear my weight I could not obtain a good view, more than to see that the nest contained several very young birds. Four days later another visit was paid, and this time I took a ladder. On my ascending the ladder and having a look at the contents of the nest, I was surprised to see a young Long-tailed Cuckoo the sole occupant, and even at this early stage nearly filling the nest. No further examination was made until 3rd March, when on my ascending to the nest the Cuckoo was found dead and had been so for several days. On 31st March, 1925, a pair of Whiteheads were noticed feeding a young Cuckoo. This was a fortnight after we last heard the Long-tailed Cuckoo screeching, and when they presumably left the island. Another pair were seen on 16th March, 1926, feeding another young Cuckoo. Both birds were feeding it, and so voracious was its appetite that the foster-parents were working almost silently, quite contrary to the usual habits of the Whitehead. Meanwhile, the Cuckoo kept up a persistent, peevish cry.

During the early stages of nesting the Whitehead is easily flushed, but as incubation advances it is not easily disturbed and will allow a person within 3 feet. On the nest the bird sits very low down, only the point of the beak and extreme tip of the tail showing above the rim. As the bird is almost the same colour as the nest, it is at a short distance hardly discernible.

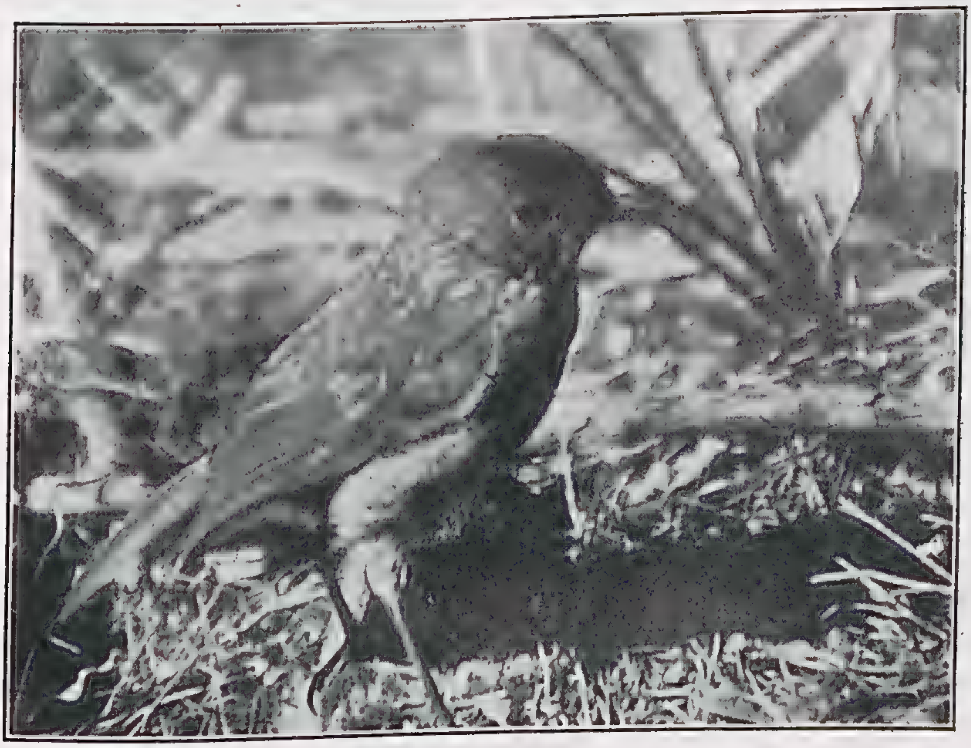
Although we have records of nests being built as early as the first week in November, it is not until February or March that many young Whiteheads are seen. One nest was found on the 10th December, 1925. It was situated in a small shrub (*Pennantia corymbosa*) four feet from the ground. It was built of grass, leaves, leaf skeletons, manuka bark, and spider webs and was lined with a few feathers of the Pigeon (*Hemiphaga novae-seelandiae*); it was very neatly built, the rim especially being well finished. It measured 4½ inches across the top and 3 inches from the top of the rim to bottom of nest. The egg-chamber was 2 inches in diameter and 1⅛ inches deep. In the nest were two eggs. One was pinkish-white, of fine texture and almost transparent, with some very minute, faintly-marked yellowish-brown blotches, slightly thicker on the larger end, rather more elliptical in shape than usual. It measured 22 mm. in length by 17 in breadth. The other egg was darker, being more of a fleshy colour, with brownish specks imbedded in the shell. It was also more ovoidoconical in form than No. 1, the small end running to a fairly sharp point. This egg was also rougher in texture than the first one and slightly longer. It measured 23 mm. by 17. The nest was examined again two days later, when another egg was found exactly like No. 2 as regards shape, size and colour. The nest was visited every few days, when the female was noticed sitting very assiduously. On 30th December the eggs had hatched, and the birds were eventually reared.

It seems strange that out of eight nests this should be the only clutch to reach maturity. Long-tailed Cuckoos were frequently seen close to the nest and were, on one occasion, even noticed on the same shrub, though we always drove them away whenever we saw them near. It goes without saying that the Cuckoos knew the nest was there. Why was it left alone? Perhaps they meant to make use of this nest for ulterior purposes and never got a chance to place their eggs in it. This nest was only 1½ chains from my kitchen door. One of the other nests found was in an *Olearia Solandri*, four feet from the ground. It was built of the bark of *Olearia Forsteri*, manuka (*Leptospermum*), small twigs, leaves of the mahoe, leaf skeletons and roots of grasses. The rim of the nest was compactly made of fine roots and spider webs. In the nest were feathers of the Parrakeet (*Cyanorhamphus*). The nest measured 4½ inches across by 3 inches



NORTH ISLAND TOMTIT (MALE) HALF-WAY THROUGH MOULT.

Photo. by Mrs. A. S. Wilkinson.



NORTH ISLAND ROBIN (MALE), " STANDS EASY."

Photo by A. S. Wilkinson.

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deep, with the egg receptacle $2\frac{1}{2}$ inches wide and $1\frac{5}{8}$ inches deep. It contained only one egg, which was a pale pinkish colour, nearly transparent, with a few isolated minute pinkish-brown specks well imbedded in the shell, hardly discernible without the aid of a lens. The egg was transversely furrowed from end to end, and the air-cell was very conspicuous. It measured 24 x 17 mm.

The nest was visited occasionally, but no more eggs were laid. I have noticed that the first egg in a clutch laid by this bird generally seems to be a clear pale-pinkish colour and nearly transparent. Some are very faintly marked with brownish specks, hardly noticeable without a lens, but most of those examined by me have been quite clear. While there is a variation in colour between the first and second egg there is no appreciable difference between the second and third.

When the young birds leave the nest the parents seem to keep with them for several weeks. A pair that brought their family of three to bathe in the creek near our cottage used to provide us with a good deal of amusement. They came regularly about 4 o'clock in the afternoon. If no one was about, the whole family would hop right in, but on the appearance of either my wife or myself one of the old birds would sound the alarm and they would fly out, the parents on to the highest branches, the young ones not far from the water. The old birds would be jerking out their squeaky alarm notes and fussing about trying to entice the young ones into safer quarters, but they were only looking for a chance to dip into the water again. If we stood still the young ones would, in spite of the frantic efforts of the parents to prevent them, again drop into the water and splash the water over themselves until they would be well soaked. They would then all get on a branch, where several minutes would be consumed in combing their feathers and drying themselves.

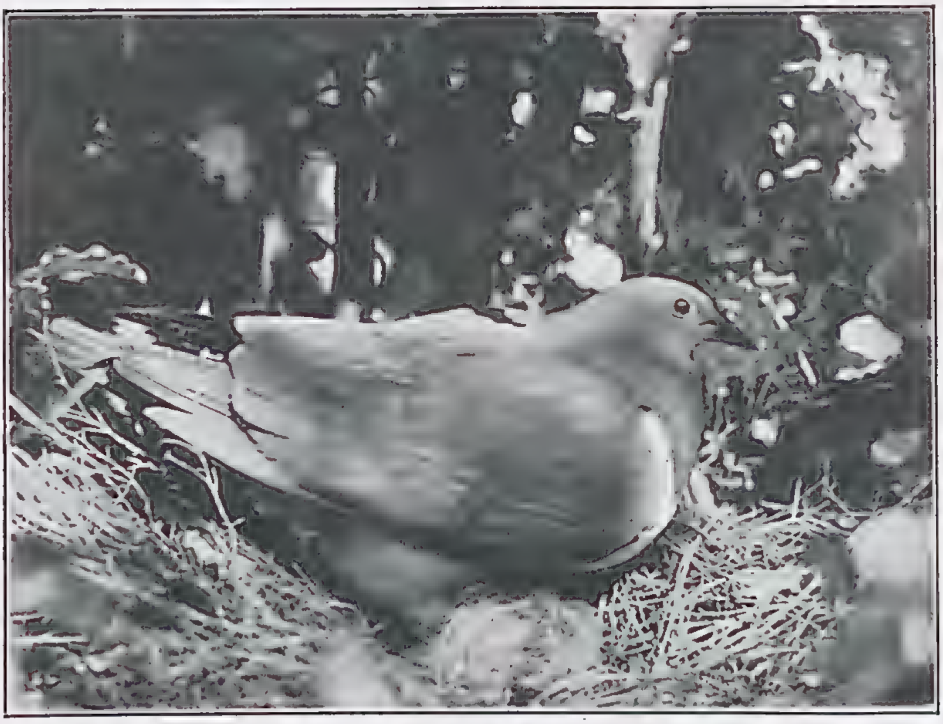
Notwithstanding the fact that the Whitehead loses a considerable number of eggs and young ones from the attentions of the Long-tailed Cuckoo and other causes, it is increasing in numbers, not only on Kapiti but in several different localities on the North Island. Several theories have been advanced to account for the reappearance of the Whitehead in localities where a few years ago it was unknown. It has even been asserted that the bird had changed its habits from frequenting low scrub to resorting only to the highest tree-tops. From what I have seen of this bird, this assertion is an utter fallacy, for not only does it frequent low scrub and the low-growing trees in the edge of the bush, but it seems to prefer them. On Kapiti there are hundreds of acres of tauhinu (*Cassinia leptophylla*), a shrub which seldom grows higher than 10 feet, and Whiteheads are always to be found in this class of country. Neither have I noticed in other parts, the Tararua Mts. for instance, that they showed a preference for the roof of the bush; it simply depended on the nature of the bush frequented. I certainly have not noticed them feeding on the ground elsewhere as they do on Kapiti.

Ground-Lark (*Austranthus novae-seelandiae*).—This Pipit is very common on all the open places and along the sea beaches, where it obtains a considerable amount of food amongst the sea-weed washed up. I have often, when out fishing, perhaps 500 yards from shore, seen these birds flying out and around the boat several times and then returning to land. A few weeks ago, when crossing to the mainland in my launch, I met two Pipits flying from the mainland to Kapiti. Mr. Webber, when fishing one day about five miles north of the island, saw several of these birds flying from Kapiti north towards Taranaki. Like several other species, this bird can be made very tame. Two come regularly every day to our cottage for bread crumbs, of which they are very fond. We have even enticed one into the kitchen.

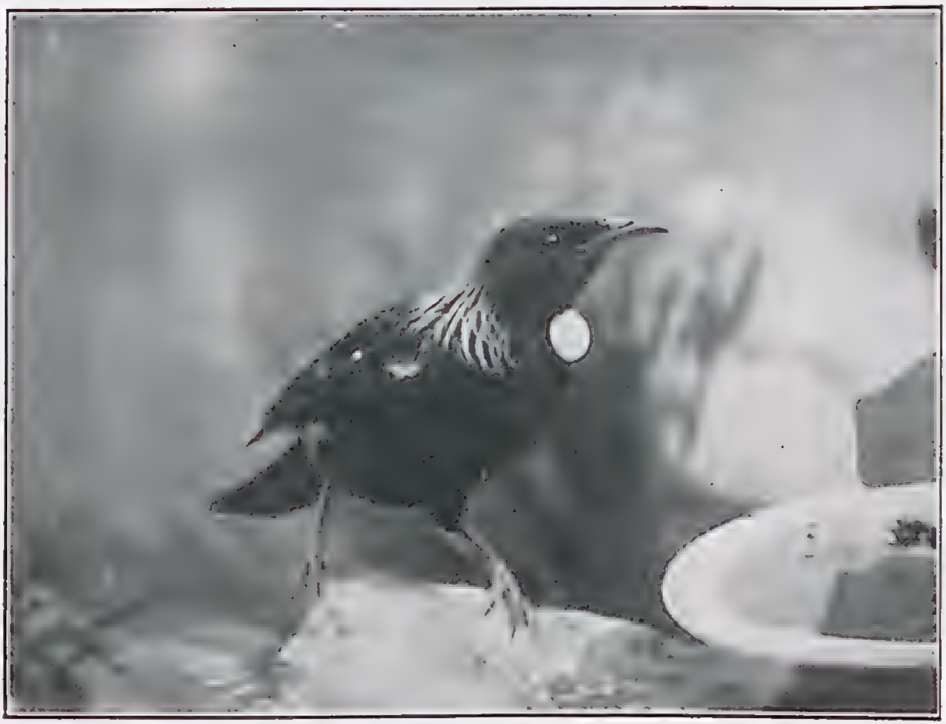
Silvereye (*Zosterops lateralis*).—A bird that flies to and from the mainland to the island. At certain times of the year hardly any can be seen, while at the present time (April) it is the commonest bird on the sanctuary. We have no records of any nests being found on the island, nor have we seen any of the birds here in the nesting season.

Tui (*Prosthemadera novae-seelandiae*).—This handsome bird is one of the commonest on the sanctuary, especially so at breeding time, when they can often be seen in flocks. On 16th November, 1925, I noticed a flock of 22. They were flying around as if possessed of some migratory instinct. After a few turns in the air half of them flew over in the direction of the mainland. At the time of their departure it was blowing a stiff gale from the south, and the birds were heading almost dead against the wind and sidling gradually across. After flying until they could just be seen with the binoculars, they turned and headed back to the island, landing nearly half a mile north from where they started. The Tui is a courageous bird and will allow no others within the vicinity of its nest. Even the Pigeon (*Hemiphaga novae-seelandiae*) and Kaka (*Nestor meridionalis*) have been noticed being chased away when they had alighted near the nest. They have a special objection to the Long-tailed Cuckoo, and give it no quarter. They seem to know that the Cuckoo is their enemy, and they never lose an opportunity of chasing it out of the bush. In this they are often assisted by the Bell-Birds (*Anthornis melanura*).

We have found dozens of Tuis' nests in all kinds of trees and at distances of from 5 to 25 feet from the ground. Usually the Tui will sit on the nest and allow an intruder to get quite close. Even when starting to incubate, some will allow a person to climb the tree and almost touch the nest before flying. When the young appear, one of the parents is always within close proximity to the nest. If a person seeks to investigate the nest at this time, the bird will give such a piercing cry of alarm that it brings not only the mate but all other Tuis within hearing to the rescue. On one occasion a pair attacked me with such force that they knocked my hat off when I had climbed only half-way to the nest. So much clamour was made by this pair and others that came to assist, that the young birds, which were ready to leave the nest, promptly did so, while the older birds continued to harass me until I reached the ground.



FEMALE PIGEON (*H. novae-seelandiae*) ON NEST.



WILD TUI APPROACHING SYRUP-DISH.

Photos. by A. S. Wilkinson.

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Within a chain of our cottage is a mahoe tree containing a spout, which after rain is full of water. This hole is about five feet from the ground. My wife noticed one day a Tui drinking out of this hollow, so she added some sugar to the water, much to the satisfaction of the Honeyeaters. Tuis, Bell-Birds, and occasionally Silvereyes now frequent this drinking-place, the Bell-Birds especially coming regularly every morning when the mixture is replenished. A natural drinking-place in a tree was known to the Maoris as a " waituhi," and in former times the Maori fowler placed snares about these places to catch the various birds.

The nest of the Tui is one of the easiest to find, especially when containing young. At this period the branches of the trees and the ground under the nest will be spattered with excreta to such a degree, in some cases, as to become offensive. The eggs seem to vary considerably in size, shape and colour. Most of the nests found contained three eggs, several had four, while one contained only two. The nest with two in it was destroyed by some animal after the birds had been sitting for a week. The eggs range in colour from a reddish-pink to white. Some have pinkish-brown blotches, much thicker at the larger end, while some are devoid of any spots or blemishes. Variation in size even in the same set is noticeable, as the following measurements of one clutch show : No. 1, 35 x 22 ; No. 2, 31 x 21 ; No. 3, 34 x 21. The nest averages about 8 inches across the top and 4 inches in depth, the egg receptacle 3 inches in diameter by 2¼ deep. The materials used for building this nest were manuka twigs and other small sprigs, and the lining was grass and fine roots, with the unique addition (so far as my observations have led me) of 6 feathers of the Sea-Gull (*Larus dominicanus*).

Bell-Bird (*Anthornis melanura*).—This beautiful songster, whose praises have been sung by nearly every writer on New Zealand birds from the time of the illustrious navigator Captain Cook down to the present, is very plentiful on Kapiti. I believe I am right in saying that even during the great scarity of Bell-Birds on the mainland of the North Island a few years ago, the species was present on this Island in greater or lesser numbers. Like the Whitehead, it has reappeared during recent years in many parts where it was for a time conspicuous by its absence. And probably the bush on the adjacent mainland was repopulated by birds from Kapiti. The far-famed morning chorus which Cook and his companion likened to " bells exquisitely tuned " is seldom heard in other parts nowadays. It is only on sanctuaries that this delightful entertainment is provided.

For nesting sites this bird seems to prefer trees with spindly branches, such as the mahoe (*Melicytus ramiflorus*). All of the nests seen by me on Kapiti have been in this tree, with the exception of one. They were nearly all in positions where it was difficult and dangerous to climb. All were made of the same material, twigs of mahoe, small sprigs of manuka, and moss. Some were lined with moss, others with moss and feathers, principally of the Parrakeet (*Cyanorhamphus*). The eggs, usually three in number, are coloured like those of the Tui, but are not so large as the eggs of that bird.

When the fuchsia (*Fuchia excoritcata*) is in flower the birds are very beautiful, as the head is then stained a blue colour from the pollen of the flowers.

Often a flock of these birds can be heard in the bush giving their notes of alarm, and I never fail to investigate the cause, in case they have found a wild cat. Generally, however, a Morepork will be found surrounded by an excited mob of Bell-Birds, Whiteheads and sometimes a Robin (*Miro longipes*) or the introduced Blackbird (*Turdus merula*).

Kingfisher (*Halcyon vagans*).—While this bird cannot be deemed plentiful, a few are always to be seen, principally about the stony beaches, where lizards (*Naultinus*) come out to bask in the sun. We have no records of this bird nesting on Kapiti.

Shining Cuckoo (*Lamprococcyx lucidus*).—A very scarce bird. We have heard it only three times since we came to the island. The only one seen was a dead bird picked up on the beach near my boatshed on 30th October, 1925. It is hard to account for the scarcity, unless it is owing to the similar scarcity of the Grey Warbler (*Gerygone igata*). I have invariably found that where the Warbler is plentiful the Cuckoo is generally present in good numbers. Mr. Webber informed me that the Cuckco (Pipiwharauroa) frequented his place occasionally. On 26th April, 1926, he was surprised to see one of these birds in the scrub near his garden. He said that he had never known them to remain here so late. Probably this was a young bird reared on the island.

Long-tailed Cuckoo (*Urodynamis taitensis*).—This species certainly atones for the scarcity of the Shining Cuckoo. About Christmas time they are very numerous; eight have been noticed flying about at the same time on the hill behind our house. They make their appearance on the island in the middle of October and leave in the middle of March. On 31st March, 1925, a Whitehead was noticed feeding a young Cuckoo about three parts grown. This parasite is responsible for a considerable amount of danger to the bird-life of the island. Not only does it destroy the eggs and nestlings, but it has been seen with a nearly full-grown young Tomtit (*Myiomoira toitoi*) in its mouth. Alongside Mr. Webber's house is a fence made of trunks of tree-ferns (*Cyathea medullarus*) standing on end. In one of the hollow trunks a Starling (*Sturnus vulgaris*) had placed its nest. A Long-tailed Cuckoo was seen to enter the hollow containing the nest, and one of the boys ran up and caught the bird. After examining the bird it was liberated. A few minutes later it was back again, endeavouring to reach the young Starlings, and it was chased away from the vicinity. So cheeky and persistent are these birds that one which alighted in a tree close to my house refused to leave until three stones were thrown at it. Even then the bird flew only about half a chain into another tree, which happened to be occupied by a Tui, and this bird promptly put the Cuckoo to flight. Several times a Cuckoo attemped to rob a nest of young Whiteheads, and it was only by constantly watching the nest that we saved the nestlings.

Kaka Parrot (*Nestor meridionalis*).—At certain times Kakas are very plentiful. They cross to the mainland, and return when the rata (*Metrosideros robusta*) is in bloom. I have on several occasions crept up to within six feet of these birds while they have been busy digging out grubs on a log. When the intruder is discovered the bird will climb or fly into the branches, and , with a harsh cry or two, the whole flock will fly away. Except for finding an old nest in a hollow rata I have no nesting details.

Red-fronted Parrakeet (*Cyanorhamphus novae-seelandiae*).—Occasionally seen in small flocks, but more often in pairs. One of these birds was seen feeding on the seeds of the manuka within three yards of the cottage, so some sow thistle (*Sonchus arvensis*) was hung in the tree. After coming regularly for this tempting food for several days, the bird suddenly disappeared. One nest of this Parrakeet was found in a kohe kohe (*Dysoxylus spectabile*). Though only four feet from the ground the entrance was too small for me to see the contents.

Antipodes Island Parrakeet (*Cyanorhamphus unicolor*).—Some of these birds from the Antipodes Islands were liberated on Kapiti in 1907. So far I have not seen any. They may have flown to the mainland.

Yellow-fronted Parrakeet (*Cyanorhamphus auriceps*). — Much scarcer then the red-fronted species. In January, 1925, I saw seven feeding on the heads of cocksfoot (*Dactylis glomerata*).

Kakapo (*Stringops habroptilus*).—Transferred to the island many years ago, but have apparently died out ; I have neither seen nor heard them.

Bush-Hawk (*Nesierax novae-seelandiae*).—I have noted only one of these fine birds, and it was either tired or sick, as it allowed me within half a chain of it before it flew. I picked up a dead bird on one of the ridges leading to the summit of the island.

Harrier (*Circus approximans*).—The Harrier is fairly plentiful on the sanctuary. It has occasionally been disturbed while feeding on the carcases of opossums (*Trichosurus vulpecula*) in the bush. One and occasionally two can be seen frequently hovering over and sometimes sitting on the flat on front of my house, where they probably catch lizards. Gulls (*Larus dominicanus*) nest on the point across this flat, and they can often be seen escorting the Harrier from the vicinity of the nests. This fine Harrier no doubt crosses between the island and the mainland, but until a few weeks ago I never heard of them flying across Cook Strait. However, one was noticed by Mr. Webber and party while fishing off the south end of Kapiti. They were about four miles from the island when they were surprised to see a Harrier coming over from the direction of the South Island.

The bird passed over them, flying towards the south end of Kapiti. The strait is about 30 miles wide at this place. The day on which the bird was noticed was dead calm.

Morepork (*Spiloglaux novae-seelandiae*).—Not very plentiful. Occasionally seen in the daytime, usually in the dark gullies. They often start calling just about or a little after sunset. I saw one of these Owls catch a Sparrow (*Passer domesticus*) one evening just about sunset. A few minutes later the bird or another one repeated the performance. A trapper found two nests in hollow trees while looking for opossums. Each contained two eggs. A nest that I examined was in a kohe kohe tree, eight feet from the ground. The eggs were white in colour, spherical in shape and very smooth and glossy. One measured 23 x 21 and the other 25 x 22 mm. In the nest along with the eggs was a half-eaten, full-grown rat. While I was examining the eggs the Morepork sat in a nearby tree, looking very miserable and keeping up a peevish, mewing cry. Before I reached the ground the bird had returned to her eggs, which were evidently about due to hatch. There was no sign of the other Morepork. The next time I visited the nest it contained one young bird clothed with white down. There was no sign of either of the parents, but just as I was leaving the tree one of them returned and, perching on the side of the hollow containing the nest, gave one glance at the young bird, then turned and watched me walk away.

Pigeon (*Hemiphaga novae-seelandiae*).—This handsome bird is very plentiful, but, like some of the other species, flies to and fro between the sanctuary and the mainland. Although I have noticed only an odd one or two doing so, some of the fishermen who live on the small adjacent islands, have told me that they have seen flocks leaving and returning to the sanctuary. On Kapiti they seem to have a long nesting season, as we have records of nests being found as early as 7th November and as late as 31st March. In both cases incubation had only just commenced. They do not appear to be particular as to site or elevation for nesting purposes; the main object seems to be a rigid foundation. All the nests that I have seen were placed on stout branches that hardly felt the wind. If the nest was placed at the extremity of the branches it would not take a strong breeze to roll the egg out of the nest. The nest, of the usual platform type, looking just like a handful of fine twigs laid on a branch, is about fifteen inches in diameter and two inches in depth, with a slight hollow half an inch deep, and is so loosely put together that the egg is easily seen from the ground. I have never seen more than one egg in a nest. They were all alike in shape, white in colour, quite smooth, and measured about 41 x 32 mm.

Weka (*Gallirallus australis*).*—This bird is numerous all over the sanctuary. There are at least twenty about my house, where they are fed on skim milk. Many authorities have expressed the opinion that where Wekas are present there are no rats. Both are plentiful on Kapiti. During my residence here we have caught about 100 rats (*Mus decumbus*) and 90 of them were caught near my cottage, where there are more Wekas than on any other part of the island. To try the rat-killing propensities of the Weka, I have twice thrown to them rats that were only slightly wounded, and although there were 10 or 12 of these birds round the skim milk dish at the time they allowed the rats to escape. Even when a dead rat has been thrown to them the birds have circled round the dead animal to make sure that it could do them no harm. When thus assured they quickly seized the rat and dragged it into the nearest cover. No doubt the Weka catches and devours many young birds, especially young Robins (*Miro longipes*) when the Robins leave the nest and before they become expert fliers. On two occasions I saw a Weka catching and eating young Californian Quail (*Calipepla californicus*), and I once saw a Weka catch a full-grown Sparrow.

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* The Wekas on Kapiti are authentically reported as having descended from a male Stewart Island bird and a female and chick captured at Waikanae, North Island.

The Weka builds its nest in any dry place, such as against the butt of a leaning tree, under logs, stumps, rocks, or in trees that are hollow at ground level. From the time the first egg is laid until the young are ready to leave, one or both of the birds are always close to the nest. If, when brooding, attempts are made to drive the bird from the eggs it acts very much like a sitting barn-door hen, refusing to leave and pecking the stick; and if the disturber forcibly ejects the bird she will make vicious pecks at the eggs. Only once have I seen the bird leave the nest voluntarily, and this time I would have stepped on the bird as the nest was under a rush bush (*Scripus nodusus*) right on a track.

They are devoted parents and if a young one is caught the parents do not hesitate in attempting to rescue the babe. The parents stay with the young ones until they are nearly full-grown, and even at this stage feed the young by allowing them to take the grubs, worms, or piece of bread from their bills—not dropping the food on the ground for the chicks to help themselves. The male seems to be more attentive to the young Wekas than the female. When the old birds start placing the food on the ground for the young ones, I have invariably found that this is an indication that the old birds are thinking of a new nest. Wekas breed on Kapiti nearly all the year round. The eggs, usually three but sometimes two in number, are very pretty. The ground colour is pinkish-white with light reddish-brown blotches looking as though they were partly under the shell. They are blotched and streaked all over on the outside with purplish and reddish brown. The eggs are large for the size of the bird; they measure 58 x 42 mm.

Pukeko (*Porphyrio melanotus*).—Although plentiful on the mainland opposite Kapiti, none of these birds lives permanently on the sanctuary. That an occasional one does fly across is evidenced by the fact that Mr. Webber noted one on his place. It was seen feeding about in the paddock for a day, and then disappeared.

Blue Heron (*Demigretta sacra*).—There are four known nesting-places of this bird on Kapiti, which they resort to every year. Although breeding every season they do not appear to increase to any appreciable extent. A pair nests about half a mile north of my house, and the birds can be noticed about the locality of the nest nearly every day. The nests are situated in caves and fissures of rock a few feet only above high-water mark, and at times the sitting bird must be drenched with spray. If disturbed while sitting, the bird usually flies straight out to sea for a short distance in a half circle and returns to the shore about 100 yards from the nest, where it will stand until the intruder leaves the vicinity. The nest is built of small sticks and twigs, and is about 20 inches in diameter dished to a depth of 2 inches. The two eggs when first laid are a beautiful slightly greenish blue, gradually fading to bluish white. They are elliptical in shape and measure 46 mm. in length by 33 in width.

Oyster-Catcher (*Haematopus longirostris*).—I saw two birds referable to this species on the beach near my residence, and a few days later saw two more, perhaps the same birds, flying towards the north end of the island.

Banded Dotterel (*Charadrius bicintus*).—These birds frequent the shores of Okupe Lake, on the native land of the north end, all through the summer months. They breed there, and sometimes eight are seen together.

White-headed Stilt (*Himantopus leucocephalus*).—This bird also resorts to the small lake at the north end for the purpose of breeding. Occasionally flocks of 25 are seen feeding in the shallow waters of Okupe.

Caspian Tern (*Hydroprogne caspia*).—I have occasionally noticed this fine Tern when I have been crossing over in my launch.

White-fronted Tern (*Sterna striata*).—This pretty little Tern is fairly plentiful and breeds in many places on Kapiti and also on Tokomapuna. When working over a shoal of kahawai (*Arripis trutta*), which chase small fish to the surface, these birds present a very pretty and animated picture. They are often accompanied by flocks of the Red-billed Gull (*Bruchigavia novae-hollandiae*). I have often noticed a dark-coloured bird chasing the Terns when they were fishing, which I must confess my inability to name on the wing. This pirate will pursue the Tern until its catch is dropped, which the other immediately seizes and devours.

Black-backed Gull (*Larus dominicanus*).—This handsome and widely-spread species is numerous all round the coast. It breeds in different places on the shores of Kapiti and on the islets. As many as 30 nests have been seen at the same time on the small island of Tokomapuna. When the nesting places are invaded these Gulls promptly leave their nests and circle overhead, uttering mournful, whining notes. The eggs of this Gull vary considerably both in size and colour. Two clutches, each of three eggs, selected at random, afford the following descriptions and sizes :—First nest, No. 1 egg, greenish-grey, with light brownish-purple blotches, well imbedded in the shell, sepia splashes and streaks on the surface, size, 69 x 47 ; No. 2 egg, bluish-grey, with small vandyke-brown specks, spread evenly over the surface, size, 70 x 48 ; No. 3 egg, same colour as No. 1, size, 70 x 46. Second nest, No. 1 egg, bluish-grey, with black splashes and vermiculations, one mark measuring 29mm. in length, by 11 in width, size, 68 x 49 ; No. 2 egg, bluish-stone colour, with small brownish-black spots and blotches, spread over the surface, much thicker on larger end, size, 68 x 47 ; No. 3 egg, yellowish-grey, with yellowish-brown patches worked into the shell, and blackish-brown blotches spread evenly over the surface, size 72 x 48.

Red-billed Gull (*Bruchigavia novae-hollandiae*).—Like the preceding species, this pretty little bird is very common. It, however, does not, to my knowledge, breed on Kapiti. On Tokomapuna 23 nests were counted on a small rock 18 feet long by 10 feet wide. While the larger Gull places its nest anywhere on this small islet—on rocks, sand, or among scrub which grows there—the red-billed bird seems to prefer rocks only. Unlike the big Gull, too, which as already stated leaves the nest on the approach of an intruder, this gallant little bird will assail the visitor with strokes of its wings and harsh cries of anger. Of all the nests on the small rock mentioned above one contained three eggs, two had only one, while the rest contained two each. The nests were nearly all made of seaweed excepting four, which were built of pieces of the ice plant (*Mesembryanthemum australe*). The birds being so pugnacious as to suggest that some of the eggs were on the point of hatching, I stayed only long enough to examine one clutch of eggs. One egg was brownish-green in colour, with brownish-black spots all over the surface. It measured 55 x 38. The other egg was a greyish-stone colour, with large blotches of dark brown, principally on the larger end, with light purplish-brown splashes well down in the shell. It measured 55 x 39. So fearless of man are these Gulls that they will alight on the launch while it is travelling. I have often been out fishing in a 10-foot dingy and had one of these birds perch on the other end of the boat. When the fishermen are taking their day's catch to Paraparaumu the boats are generally followed, sometimes for miles, by both species of Gulls. It is surprising how soon Gulls will discover that there is food to be obtained. Many times before starting to clean a fish on the beach I have glanced around and not noticed any birds, but in a few minutes perhaps a dozen Gulls would be wrangling over the scraps.

Mutton-Bird (*Puffinus griseus*).—These birds are said to breed in considerable numbers on the highest parts of the island, where the ground is burrowed for yards around. I have often picked up dead specimens washed ashore on the beach.

The Nelly (*Macronectes giganteus*).—Although I have not noticed this species Mr. Webber has often seen it, and at one time had a bird in captivity for several weeks.

Cape Pigeon (*Daption capensis*).—Mr. Webber has noted this bird in the channel between Kapiti and the mainland.

Broad-billed Whale-Bird (*Pachyptila vittata*).—These little birds are often seen, and occasionally dead ones are washed ashore. After a spell of boisterous weather the sandy beaches of the adjacent mainland are often strewn with the dead bodies of this Prion.

Whiroa (*Pachyptila desolata*).—Like the preceding species, these birds seem to have a rough time during gales, as they are often picked up on the beaches.

Diving Petrel (*Pelecanoides urinatrix*).—Sometimes these little Petrels are seen in thousands. I have seen, flying past Rangitira, an occasional flock so huge that the birds took three-quarters of an hour to pass. Some of the local fishermen have told me that occasionally these birds cause them much annoyance by diving at the bait and taking it off the hook before the sinker has carried the line down. So persistent were the birds that before they would leave the bait alone 10 had to be destroyed. It is probable that this species breeds on Kapiti, but I have yet to find a nest.

Albatrosses.—Occasionally I have seen Albatrosses, but always at times when I was without my binoculars. However, both Mr. Webber and the fishermen have seen Mollymawks and Albatrosses at different times.

Crested Penguin (*Eudyptes cristatus*).—One of these handsome birds came ashore to moult on 8th January, 1926. The right flipper was badly cut and the bird looked very miserable. Three days later it presented a very singular appearance, for the feathers were peeling off in handfuls. In a few days time, however, the bird had donned a new suit, and then put to sea again. Some years ago Mr. Webber had a pair of these Penguins in captivity for a considerable time. The birds were fed on fish and were eventually liberated.

Blue Penguin (*Eudyptula minor*).—The little Blue Penguin is very plentiful around Kapiti, and at the present time (April) they are very noisy. They are ashore now and can be heard all through the night, making a row something like cats. They are even up on the hill behind my house, a quarter of a mile in the bush. A pair nests regularly every year in a box inside the boatshed.

Gannet (*Sula serrator*).—Gannets can be seen all the year round, usually one or two birds but occasionally 8 or 10. Unerring divers, that sight their prey from a considerable altitude and very seldom miss the mark. With a swift turn of the body the birds plunge headlong with the wings partly folded and the head and body perfectly straight. When close to the water the wings are tucked to the side and the Gannet enters the water with a flop which, when heard on a calm day, sounds like a pistol shot. They are no sooner under the water then they bob up again like a cork. If the bird has been successful (and it nearly always is) the fish is swallowed in one or two gulps, and after a few seconds' wait the bird will be off, to repeat the performance. Sometimes, but not often, the bird, after swallowing the fish, will have a good splash and preen its feathers before flying away. The height from which a Gannet sights its quarry seems to be governed by the state of the sea. On a fine day with calm water they sail along about 20 or 25 feet above water, but if the sea is rough they will drop down to about 8 feet or less. Although this bird usually dives straight into the sea, I have occasionally seen it dive in from about 3 feet at an angle of about 25 degrees and skip along the surface, in and out, like a flat stone thrown on the water.

Black Cormorant (*Phalacrocorax carbo*).—This much persecuted Shag at least finds sanctuary here. They breed in half a dozen places about the island, especially on the high, inaccessible rocks at the south-western corner. At this place I have picked up several dead young birds, which apparently had fallen out of the nests. Scores of these birds cross the sea every morning, to fish in the shallow waters off Paraparaumu beach, and can always be seen returning to Kapiti towards evening.

Pied Cormorant (*Phalacrocorax varius*).—Occasionally noticed amongst the Black Shags.

White-throated Cormorant (*Phalacrocorax brevirostris*).—Have seen only one bird that was referable to this species.

Grey Duck (*Anas superciliosa*).—Several pairs have bred close to where we live. In the shooting season the lake at the north end is sometimes black with these birds. I have also noticed huge flocks of Ducks settle on the sea close to the island.

Flightless Duck (*Nesonetta aucklandica*).—This Duck was, I believe, liberated on Kapiti some years ago. Apparently it did not survive, as it has not been seen for years.

Kiwi (*Apteryx*).—Kiwis were also liberated some time ago. They have been both seen and heard during recent years. I have not seen the bird myself, but have heard it whistling on two occasions, and there are to be seen in different parts the holes in the ground made by this bird in its search for earth worms. From its cry I take it to be the species *oweni*.

INTRODUCED SPECIES.

Starling (*Sturnus vulgaris*).—This introduced bird is abundant in all open grass areas. A few days ago I saw 8 of these birds attack a Bell-Bird with such vigor that the Bell-Bird had to seek more peaceful quarters. A few minutes later a Tui alighted in the tree occupied by the Starlings, but they did not attempt to oust him from his perch. On Tokomapuna there is a clump of taupata trees (*Coprosma baueri*) where immense flocks of Starlings congregate every evening. About sunset they can be noticed wending their way to roost on this small island in a continual flock which reaches across to the mainland two miles away. There are hundreds of thousands of them. I have often pulled across in my dingy to witness the birds coming home to roost. When the vanguard of the flock arrive and discover the intruder in their domain they wheel in circles with a noise like an express train rushing through a station. In the meantime more birds have arrived, until the sky is black with them and the noise is deafening. It is strange why they should choose an island like Tokomapuna for a roosting place, and negotiate a two-mile flight across the sea in preference to camping on the mainland. In fair weather they fly high, but in the prevailing westerlies with their rough seas they fly low, just skimming the surface of the water like sea-birds. That these birds are responsible to a considerable extent for the spread of noxious weeds in New Zealand is perhaps not generally known. On this small islet alone can be seen African box-thorn (*Lycium horridum*) elderberry (*Sambucus nigra*), blackberry (*Rubus fruticosus*) and lupin (*Lupinus arboreus*) growing from seeds carried by the Starling.

Redpoll (*Linota rufescens*).—This pretty little bird is plentiful in all the open places.

Hedge-Sparrow (*Accentor modularis*).—Fairly common. One of the best of the introduced birds.

Skylark (*Alauda arvensis*).—A few to be seen occasionally.

Californian Quail (*Callipepia californica*).—A few small mobs scattered about the sanctuary.

Black Swan (*Chenopis atrata*).—Occasionally one or two are seen.

Yellowhammer. (*Emberiza citrinella*).—Not many about.

Chaffinch (*Fringilla coelebs*).—Scarce.

Greenfinch (*Chloris chloris*).—Seen on two occasions only.

House-Sparrow (*Passer domesticus*).—Not plentiful. About a dozen all told live about Rangitira near my house.

Blackbird (*Turdus merula*).—Not plentiful, but a few are to be seen in different parts of the sanctuary.

Song-Thrush (*Turdus musicus*).—About the same in number as the preceding species.

Blue Wren's Moult.—My garden *Malurus* had started his moult on 9th February this year, and now makes himself rather scarce, skulking a lot in the bushes while the family hops boldly into the open. When at Latrobe, six miles inland from here, on 17th February, I noted three male *Maluri* in different stages of the moult; one had lost nearly all his blue, having only the narrowest of rings left on the hind-neck, and a little on the cheeks and crown of head. The second was in about the same stage as the garden individual here—a fair amount of blue still, but very dingy, and the whole plumage bedraggled-looking—while the third was almost intact, showing hardly a sign that the feather-casting had begun. This accounts for the different appearances of Wrens we see in late autumn, when some are resplendent in new suits, while others are still undergoing the process of reformation.—H. STUART DOVE, West Devonport, Tasmania (28/2/27).

The Adaptability of Sub-Antarctic and Antarctic Birds to Local Conditions.

BY A. G. BENNETT, R.A.O.U., Port Stanley, Falkland Islands.

THE Antarctic does not contain very many species of birds, but it does contain untold millions of individuals of most of the species found there.

The true Antarctic commences at 60° S. lat. for all practical purposes, and not at the Antarctic Circle. In this the South differs very materially from the North. As an example of the conditions, the land at Admiralty Bay, South Shetlands, in 62° South latitude, is almost entirely glaciated. A grass, a flowering plant, and a few lichens can be found after diligent search. At 63° South these same plants are either exceedingly rare or non-existent. The summer (?) is a dull, overcast, sunless, cold affair, inimical to plant life. Thus there are no insects, and beyond the Sheathbill (*Chionis alba*) no land birds. Land mammals do not exist. Storm-driven birds have been found at Deception Island in 63° South. They include Bartram's Sandpiper (1923) and the Brown Pintail (*Poecilonetta spinicauda* Vieillot) (1916-7). These are purely accidental occurrences and are apart from the argument. Contrast these violent conditions with Spitzbergen in 80° North or 1100 miles nearer the Pole. There, a summer prevails, even if a short one, plants abound and thrive; insects, land birds, and land animals live in abundance. Yet in both places one meets countless birds.

In the Falkland Islands several birds have smaller clutches of eggs than is usual with their relatives in other parts of the world. In this the waders of the family *Charadriidae* are conspicuous. Two Oystercatchers (*Hæmatopus leucopus* and *H. quoyi*) lay two eggs and are sometimes satisfied with one. The Dotterel (*Charadrius modestus*) never exceeds two. The Falkland Island Plover (*C. falklandicus*) lays two or three eggs, and I know of a single case of four eggs. A Snipe (*Gallinago paraguaie*) lays but two eggs. A "Sparrow" (*Phrygilus melanoderus*) and a Pipit (*Anthus correndera phillipsi* Brooks) lay three or four or rarely, five eggs. Incubation is in this case even—*i.e.*, the sitting commences after all the eggs are laid. This is an important point in view of what follows.

I believe it is due to the very variable weather of the Falklands, where sudden snow and hail squalls are the order of the day, even in summer, that birds laying a small clutch of eggs have had much the best chance of success. The eggs of most of these birds are inclined to be rather larger for the size of the parent than one would expect. This means that only the strongest born have a chance of existence. The somewhat larger egg and the prevalence of sudden cold would lead to greater difficulties for the sitting bird to cover the eggs and give them the required degree of heat. The problem appears to be solved purely by natural selection in reducing the number of eggs in the clutch. The single instance of the Falkland Island Plover laying a clutch of four eggs is most probably a reversion to ancestral habits. This would indicate a southern migration of a northern form to at least S. America at some remote period. Becoming adapted to local conditions, they have continued to exist.

Let us now try to find good reasons in the Antarctic proper for the peculiar habits so far noted there. First let me say that notwithstanding the really bad conditions that prevail, resident species actually exist even here on the fringe of the Antarctic. This fringe is not worse nor better than the deepest spots of the Antarctic, except perhaps that it has more frequent fogs and storms than the higher latitudes. The degree of cold is much the same, and the glaciation is not less.

South Georgia has three endemic species of land birds. Apart from these, its bird life is Antarctic with a suggestion of cold south temperate forms which breed there. The South Shetlands have an endemic species, a Shag or Cormorant, and also resident are the Sheathbill (*Chionis alba*), a Gull (*Larus dominicanus*), and probably McCormick's Skua. Some of the Penguins and Petrels do not wander far north even in winter, not further than open water will supply them with food.

Take first the Penguins, not because they are the most numerous, for they are a long way outnumbered by the Petrels, but because they are to most readers of the greatest interest. Much has been written of the habits and life of Penguins, at least during the period they come to land at nesting time—roughly for half of the year. This can be summed up shortly as consisting of feeding, fighting, courting, thieving and adultery. As is well known, the thieving consists of robbing each other of nesting material and eggs.

Both on land and at sea Penguins have numerous enemies. On land, the Giant Petrel (*Macronectes giganteus*) eats them, Skuas and Sheath-bills, ever watchful, pounce on their eggs the moment they are uncovered, and in the ocean sea leopards certainly take an enormous toll. Other seals and the killer whale are under suspicion. The remarkable thing is that so many young reach maturity. Should an egg roll out of a nest, and a very large percentage do, in the course of fights, no notice is ever taken of it—it will not be stolen by a Penguin—but wonderfully quickly, if it is clean, it is taken by a Skua. The stealing by Penguins themselves is solely confined to eggs in a nest.

I have not seen it stated anywhere before, and I do not put it forward as an acquired habit due to local conditions, yet this egg-stealing is undoubtedly a benefit to Penguins as a species. It must assist in continuing the race in two ways—first, in preventing the eggs from becoming chilled, and, secondly, by covering them before the ever-present enemy can pounce upon them.

The whole clutch may not survive, but one or more eggs may hatch out even where one or both parents have either been killed in fighting or formed a small item in a sea leopard's breakfast. The whole thing suggests community nesting rather than individual housekeeping.

The almost incredible numbers of Petrels that are found in the Antarctic are striking. Their nesting habits call for no comment. There is the usual one egg, very large for the bird. Their nesting habits have been fixed for a very long time.

The part of the Antarctic referred to in this article—truly a small fraction—is given up to a great whaling industry.

Now, whaling is a colossal butchery, decidedly wasteful in just those articles that constitute the food-stuffs of Petrels—flesh and fat. The Petrels have not been slow to recognise this, and assemble in great numbers wherever whaling operations are in progress, even waiting for the steamers to arrive in the customary place. The Giant Petrel is abundant only in stormy weather near the ships. The Cape Pigeon (*Daption capensis*) swarms in millions and has visibly greatly increased about Deception Island in twelve years. This applies both to the birds and to the almost inaccessible nesting-sites. The latter have spread in a remarkable manner. This assembly is due to the great abundance of food made available by the whaling. It will indeed be a sorry day for Petrel-land when whaling shall cease. These garrulous birds must fight over their food even if there are but two individuals picking at an entire whale—it is quite ludicrous. The greatly increased food supply has, no doubt, kept life in nestlings that would otherwise have perished with the severe climate, for mortality is painfully common in nestlings and especially so with the Storm Petrels (*Oceanites oceanicus* and *Fregetta tropica melanogaster*).

Wilson's Petrel (*O. oceanicus*) abounds. This bird has found that globules of oil float away from whales and it feeds thereon. Under some conditions quite a lot of hardened whale-oil is stranded. This bird, in numbers, then walks on the land picking up the fat. The posterior position of the legs, coupled with their length and weakness, prevents these birds from standing on the feet in the usual way. They can, and do, walk quite well on the feet, but they must keep the wings vibrating the whole time. The Snow Petrel (*Pagodroma nivea novageorgicus*) and the Antarctic Petrel (*Thalassoica antarctica*) alone of the Antarctic Petrels seem not to have become adaptable to the change.

It is said, and I believe truly, that very few Albatrosses (*Diomedea*) are now seen in Cape Horn Seas. Most of those that I have seen in making many crossings of this stormy water have been what I take to be immature birds. Twenty years of whaling have attracted these birds to South Georgia, where they now breed, and a number to South Shetlands, perhaps breeding there also. Food being in abundance, Albatrosses no longer have to scour so much ocean for their living, and thus they have become more local.

Of the remaining birds, most lay more than one egg, and it is here that the greatest modification has taken place. The Gull (*Larus dominicanus*), Tern (*Sterna hirundinacea*), and Sheathbill (*Chionis *alba*) each lays 2 or 3 eggs. Two factors count. A sudden drop in temperature freezes and bursts uncovered eggs; such burst eggs are common. An uncovered egg is, if observed, immediately snatched up by the ever-watchful Skua. It follows that the only safety for the eggs is for one bird to sit on them as soon as they are laid. This is exactly what is done. The result is that the eggs are at different stages of incubation. Young birds and fresh eggs together are common. This is most evident in the Sheathbill. There appears to be over one week between the laying of successive eggs. With Gulls the difference is not so pronounced, but the Tern may do anything. Young of very different ages are found in the same nest. I suspect that females not infrequently "board out" an egg to another sitting bird. Where two eggs are found, the difference is not comparable to the "odd" egg, which differs not only in markings, but in size and shape as well. This difference is not seen in every case, but it is apparent in most cases.

Ruthlessness is the law of nature in the Antarctic. The very strongest only have a chance to survive. But for the adaptability of some, they would have gone out.

I believe there is no question but that the glaciation of the Antarctic is less than it has been. There is a good deal of evidence to support this view. Small islands and headlands near sea water are now free from actual ice unless a glacier runs down there from a larger body of land. Where there is some glaciation on small pieces of land it is not severe, and is without apparent movement. This is only on impervious rocks. Porous rocks near the sea are not glaciated. This leaves but a very small area of the whole for birds, yet there is no overcrowding except at Penguin rookeries. Usually there is expansion room even here. The nests of several species are almost, if not quite, unknown.

Of the ice-free land, the first to appear is the top of a ridge or bump—a nunatak in the snow. This will generally house one breeding bird at least.

Although breeding sites are limited and the bird population is so numerous, still we see that many birds have had sufficient time to vary their habits of nesting to meet and overcome these conditions. I venture to suggest that as the process must be a slow one, the climatic and glacial conditions along the fringe of the Antarctic, at least, have been much the same for a long period.

One would not suspect a true Seagull as being an agriculturist, but such is the case. I found at Admiralty Bay 62° South, patches of quite a good growth of grass (*Aria*). These patches were those early uncovered from snow. The Gulls (*Larus dominicanus*) nest fairly early and they use for nesting material, in that place, grass, green and wet. The birds pulled out the grass in clumps by the root for nest building. The grass is frequently frozen at the roots even during the growing period. It is conceivable that, during bad summers, this grass might not flower and seed, even for several seasons in succession. I noticed that where there was a patch of grass there was generally evidence that a Gull's nest had been there at some time or that running water did, at times, pass through the patch.

The frozen grass-tufts would, and doubtless do, derive considerable benefit by being built into a Gull's nest. The warmth from the sitting bird although killing the inside tufts would thaw and stimulate growth in those on the outside. A certain amount of guano would be added, and although I was unable to remain to see the process through, I ancitipate that these growing nests would flower with certainty and at an earlier date than those growing in a free state.

My own efforts to grow this grass in a tin on a ship's deck were not successful, in so much that although the grass is alive after over four months, yet its growth was almost nothing and there is no suggestion of flowering.

The Gull (*L. dominicanus*), a local race, larger and lighter as an immature bird than that inhabiting the Falklands, appears to be able to arrange its nesting to suit the variations of climate. In the Falklands, eggs are laid on or about the 10th of December. At South Shetlands they are much earlier. Deception Island, 63° S., is volcanic and still warm. Here suitable snow-free nesting spots appear early and the Gull breeds accordingly. Eggs were not fresh on November 18th. One degree further north, at Admiralty Bay, fresh eggs were found well into December, and very few before. The reason would appear to be lack of sites until the snow starts melting away. Nesting must commence as early as possible to ensure that the young get off before winter sets in.

R.A.O.U. Congress, 1927.

The Hon. State Secretary of the R.A.O.U. for Western Australia (Mr. D. L. Serventy) has forwarded a tentative programme for the next Congress and camp-out of the Union. Members are invited to state their view of the following programme :

Sept. 14th	Leave Sydney.
Sept. 15th	Leave Melbourne.
Sept. 16th	Leave Adelaide.
Sept. 19th	Monday. Arrive in Perth. Civic reception. In the afternoon a reception at the Zoological Gardens.
Sept. 20th to Sept. 22nd	In session at the Museum. Leave for Camp-out on the afternoon of the last day.
Sept. 23rd to Oct. 2nd	Camp-out.

The suggested locality for the camp-out is a point between Denmark and Pemberton, in heavily timbered country, where settlement has not penetrated. It is hoped to obtain accommodation at a settler's house on the outskirts of settlement.

The South-West Coast of Tasmania.

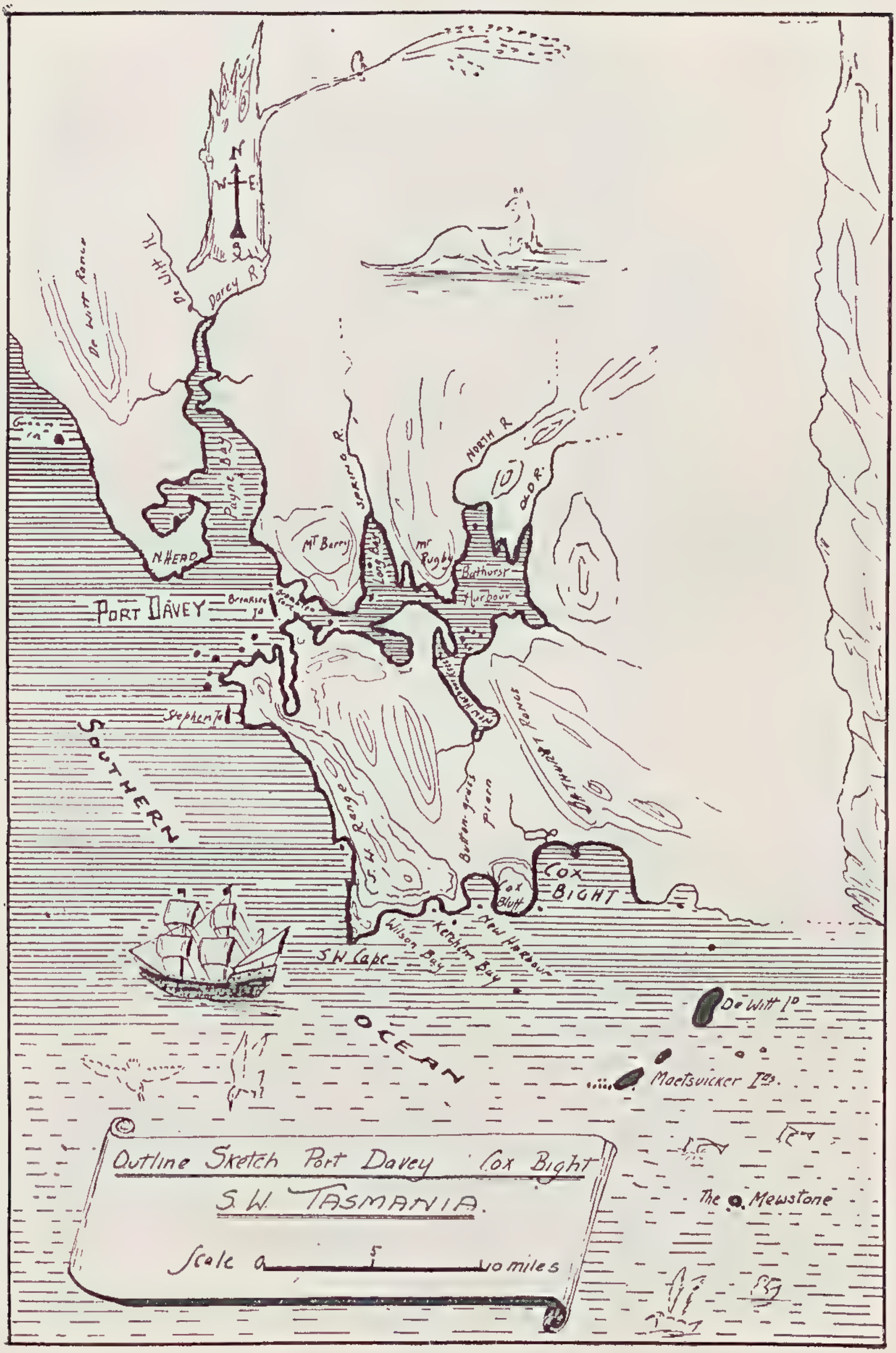
BY CLIVE LORD, F.L.S., R.A.O.U., Director of the Tasmanian Museum, Hobart.

ON a November evening in 1642 the explorer Tasman sighted the south-west coast of Tasmania. Its rugged character warned him off, and he coasted along towards the east until he came to shores which offered a more favourable locality for anchorage. To-day the coast still repels invaders; it is little changed since the high-pooped Dutch vessels passed by. It is true that at times within last century there were settlements in Port Davey, for there were shore stations built by the whalers as well as camps for those gathering Huon pine, but their day is past. Both the cetacean wanderer of the ocean and the slow-growing pine of the river valleys have felt the annihilating hand of man, and no longer exist in these regions in sufficient numbers to warrant pursuit on a large scale.

The south-west area, and the great mountainous regions to the north and east, embracing almost one-fifth of the island, are without permanent inhabitants. The grim quartzite and conglomerate ranges, catching the full blast of the ever-prevalent westerly gales, stand as barriers against the steady pressure of settlement from the east. Each season sees stock pushed further out across the western valleys, and each year adds to the efforts being made to wrest the secrets of Nature from the grim gullies and rocky bastions of the western mountains, in order to lay hold of the rich lodes of precious minerals for which prospectors ever seek. The few finds that have been made serve but to quicken the search, and should the future bring mineral wealth on a large scale the south-west will surely give up its natural native beauty, and its fauna and flora feel, in more or less marked degree, the advent of man with his settled habitations, his guns and dogs, and his domestic cats which run wild.

When that day arrives it will spell disaster to a large section of the avian population, for this area of wind-swept, barren peaks and button-grass (*Mesomelaena spaerocephala*) moors support species which will rapidly wilt away as soon as the changed conditions incidental to settlement are introduced. The peculiar avifauna of button-grass plains, the Ground-Parrots (*Pezoporus*), Emu-Wrens (*Stipiturus*), and Grass-Birds (*Calamanthus* and *Megalurus*) will be the first to go. One cannot see how it can be prevented.

Last January, wandering amidst the mountains and moorlands of the south coast and Port Davey region, I had the privilege of seeing great stretches of country as yet untouched by man. Here the button-grass plains take on a completely different aspect from those of the other parts of the island, where fire and other agents of destruction have had their day. As you cross these virgin south-west moors, Emu-Wrens flutter to right and left, and a brisk chase will enable you


Outline Sketch Port Davey Cox Bight
S.W. TASMANIA.
Scale 0 5 10 miles
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Payne Bay
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PORT DAVEY
Breaksea Id
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Stephen Id
Spring R.
Mt Berry
Long Bay
Mt Rugby
North R.
O.D.R.
Bathurst Harbour
New Harbour R.
S.W. Range
Button-grass Plain
De Witt Range
Cox Bluff
COX BIGHT
SW Cape
Wilson Bay
Ketchem Bay
New Harbour
SOUTHERN
OCEAN
De Witt Id
Maatsuicker Ids.
The Mewstone

to capture one of these "moths," for their flight is but a feeble flicker above the tips of the grass. Every now and then a Ground-Parrot, or perhaps a Brown Quail, rises from one's very feet with a whirr, and disturbs in its flight numerous Grass-Birds, which perch with flicking tails upon the bending stems of the button-grass in order to ascertain the cause of the commotion. Then, just as quickly, all is silent—each bird seeks its natural habitat (the ground), and once again the moor seems empty but for its broad expanse of brown and green, broken here and there by the scarlet Blandfordia flowers (*Blandfordia marginata*), or other such gems of the open. The same conditions are general in most undisturbed areas of the region, and the area must support a very large population of ground-living birds, belonging to species which have become scarce in other sections of Tasmania. Here, in the south-west, *Pezoporus* is far more plentiful than *Platycercus*, and *Stipiturus* outnumbers *Malurus* by ten to one.

Leaving the lowlands and standing amidst the bare quartzite of a mountain summit, with Black-cheeked Falcons (*F. peregrinus*) wheeling above, you may look down upon many such moors, all with their wonderland of feathered friends. And away yonder the sea-birds rise and fall with the waves which stretch away to the south until they mark with foam the fringing reefs of the Maetsuicker Group, where Mutton-Birds (*Puffinus tenuirostris*) breed in thousands, and still further to that distant outcrop, "The Mewstone." Here the Gannets (*Sula serrator*) and the White-capped Albatross (*Diomedea cauta*) nest. Surely a worthy home for these aerial wanderers of the ocean wastes!

Inland from Cox Bight and New Harbour on the south coast rises a long, button-grass plain which does not cease until it merges into the waters of New Harbour Creek, a southern arm of Bathurst Harbour, which is the easternmost portion of the picturesque collection of bays and rivers generally grouped as Port Davey—the nearest approach to a true fiord which Tasmania or Australia can show. On the waters of the port, Black Swans (*Chenopis atrata*) swim with graceful ease, and the quiet backwaters of the innumerable creeks swarm with Ducks.

Whichever way is taken, the moors, the inner waters of Port Davey, or the ocean and the coastal islands each have their charm, and to the ornithologist this great area offers much. Without wishing in any way to hinder the hoped-for economic progress of our Island home, one does hope that for many years there may remain sections of country wherein the true and natural avifauna of the button-grass plains may be observed—where the "moths" will continue to flutter and the *Pezoporus* breed amongst the tussocks undisturbed by cats or the roar of the fire fiend.

NOTES ON CERTAIN SPECIES OBSERVED IN S.W. TASMANIA.

Little Penguin (*Eudyptula minor*).—Plentiful along the whole of the south and south-western coast. Breeds in this vicinity.

Brown Quail (*Synoicus australis*).—Flushed on the moors, and often heard calling at Cox Bight.

Bronzewing Pigeon (*Phaps chalcoptera*).—In the patches of dense coastal scrub and also in the gullies of the Bathurst Range this species is to be met with.

Mutton-Bird (*Puffinus tenuirostris*).—These birds occur in thousands. Time and weather conditions did not permit a personal investigation of the rookeries, but we were given to understand by fishermen and others who know the coast that rookeries occur on Ile du Golfe, Maetsuicker Group, and the islands to the south of Port Davey and the islands at the entrance. A cruise in the vicinity of Maetsuicker, Breaksea, and Stephen Islands gave the impression that the rookeries were of large dimensions. Certain of the crew of the fishing boat *Storm Bay* recently landed on the islands to the north of Port Davey, and they report those as being honeycombed with the burrows of Mutton-Birds.

Fairy Prion (*Pachyptila turtur*).—Many Prions were seen on the south coast. Priors breed on the Ile de Golfe.

White-capped Albatross (*Diomedea cauta*).—Observed on several occasions on the south coast. This species breeds on The Mewstone. Recherche Bay, a few miles away, is the type locality of this form.

Black Cormorant (*Phalacrocorax carbo*).—Observed along the coast and also on the inland waterways and lagoons.

White-breasted Cormorant (*Phalacrocorax fuscescens*).—This species was met with everywhere along the coast and in Port Davey.

Gannet (*Sula serrator*).—Observed all round the coast. This species breeds on Pedra Blanca and The Mewstone.

Silver Gull (*Larus novae-hollandiae*).—Common ; breeds in many places along the coast, including the western side of Cox Bight and certain islands within Port Davey.

Pacific Gull (*Gabianus pacificus*).—Noted on several occasions.

Pied Oyster-Catcher (*Haematopus ostralegus*).—Evenly distributed round the coast.

Black Oyster-Catcher (*Haematopus unicolor*).—This species was to be observed on most of the coastal beaches visited.

Australian Snipe (*Gallinago hardwickii*).—Observed on the plains between Cox Bight and New Harbour Creek.

White-fronted Heron (*Notophoyx novae-hollandiae*).—Seen both at Cox Bight and Port Davey.

Black Swan (*Chenopis atrata*).—These handsome birds are to be seen in thousands in certain parts of Port Davey.

Grey Duck (*Anas superciliosa*).—Very common in Port Davey. Noted also on the Duck Holes in Cox Bight.

Swamp-Harrier (*Circus approximans*).—Occasionally seen circling over the button-grass plains.

White-breasted Sea-Eagle (*Haliætus leucogaster*).—Evenly distributed around the coast.

Black-cheeked Falcon (*Falco peregrinus*).—These birds were noted on the Bathurst Range.

White-headed Osprey (*Pandion haliaetus*).—Specimen seen near Breaksea Island, Port Davey.

Spotted Owl (*Ninox novae-seelandiae*).—Observed at Cox Bight.

Black Cockatoo (*Calyptorhynchus funereus*).—Seen fairly frequently. Appears to be evenly distributed throughout the south-western area.

White Cockatoo (*Kakatoe galerita*).—Even more plentiful than the previous species.

Green Rosella (*Platycercus caledonicus*).—Specimens of this species were observed at most of the places visited.

Swift Parrot (*Lathamus discolor*).—Seen at Cox Bight.

Ground-Parrot (*Pezoporus wallicus*).—This species, which has become so rare in the settled districts, was one of the most plentiful species at Cox Bight, and was also fairly common amid the button-grass at Port Davey.

Pallid Cuckoo (*Cuculus pallidus*).—Noted on several occasions.

Tree-Martin (*Hylochelidon nigricans*).—Noted at Cox Bight.

Grey Fantail (*Rhipidura flabellifera*).—Seen in the gullies on the southern slopes of Bathurst Range.

Golden-breasted Whistler (*Pachycephala pectoralis*).—Observed on several occasions.

Whistling Shrike-Thrush (*Colluricincla harmonica*).—Evenly distributed throughout the area.

Large-billed Ground-Thrush (*Oreocincla lunulata*).—Frequents the scrubs and foothills of the Bathurst Range.

Brown Thornbill (*Acanthiza pusilla*).—Noted along the coast of Cox Bight.

Brown Scrub-Wren (*Sericornis humilis*).—Common among the coastal scrubs.

Striated Field-Wren (*Calamanthus fuliginosus*).—Common on the button-grass plains.

Little Grass-Bird (*Megalurus gramineus*).—Also noted on the button-grass plains.

Emu-Wren (*Stipiturus malachurus*).—A very common species at Cox Bight. This small species is known to bushmen as the " Button-grass Moth."

Blue Wren (*Malurus cyaneus*).—Only occasionally seen.

Silvereye (*Zosterops lateralis*)*.—A flock of these birds was noted at Cox Bight.

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* *Z. halmaturina* (?).—EDITOR.

BRAMBLE COVE, PORT DAVEY, TASMANIA.

Tasmanian Government Photo.

NATIONAL MUSEUM MELBOURNE

Yellow-throated Honeyeater (*Meliphaga flavicollis*).—Noted on several occasions.

Crescent Honeyeater (*Phylidonyris phyrrhoptera*).—Evenly distributed throughout the area.

Yellow-winged Honeyeater (*Meliornis novae-hollandiae*).—A fairly common species amid the dwarf banksia scrubs of the coast.

Australian Pipit (*Anthus australis*).—Observed on several occasions.

Firetail (*Zonaeginthus bellus*).—A fairly common species at Cox Bight.

Australian Raven (*Corvus coronoides*).—Observed on several occasions.

Hill Bell-Magpie (*Strepera arguta*).—A common species throughout the whole area.

New Records from the Swan River District, Western Australia.

BY D. L. SERVENTY, R.A.O.U., Perth.

SINCE the publication of Mr. W. B. Alexander's paper on the birds of the Swan River District in 1921,* consolidating all the available information on the species found in this area, and the supplementary records embodied in a subsequent paper† by the same author, further data has been gathered locally which it would be desirable to place on record.

Originally I had intended merely to list some observations made by myself on certain of the rarer birds of the district, but through the courtesy of Mr. L. Glauert, of the W.A. Museum, I have been enabled to add thereto the recent records of the Museum. This paper, therefore, so far as I have been able to make it so, brings up-to-date Mr. Alexander's valuable and thorough compilation. The latter included 191 species of birds, to which two more were added in the succeeding paper. Below I give eight fresh records for the district (some of them being also first references for the south-west), together with notes on the further occurrences of a few rare species which have already a place on the local avifaunal list. As an aid to future reference I have also recapitulated the additional information contained in Mr. Alexander's second paper. The total number of species now recorded from the district stands at 201.

Wilson Storm-Petrel (*Oceanites oceanicus*).—The finding of two specimens of this species at Cottesloe Beach by the author on 29th May of this year (1926), after a storm, is of rather more than ordinary interest, as specimens obtained at or near the Australian mainland

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**Emu*, Vol. XX., p. 149.

†*ibid.*, Vol. XXI., p. 261.

appear to be particularly rare in collections. So far as this State is concerned the specimens under notice are, I believe, the first to be obtained, though the presence of the species in our waters has already been recorded, Dr. W. Macgillivray noting one bird one day's steam W.N.W. of Fremantle in May, 1917. Mr. F. Lawson Whitlock informed me that he has observed the species on a number of occasions on trips between Carnarvon and Broome, particularly near the Dampier Archipelago, the birds keeping together in pairs. It may be mentioned that my birds were found within a yard or so of each other, and were a male and female. The skins have been deposited in the W.A. Museum.

Soft-plumaged Petrel (*Pterodroma mollis*).—The first specimen collected in this district was found on the beach at Cottesloe on August 8, 1919, and is referred to in Mr. Alexander's initial paper. In his second he mentions another specimen caught at Cottesloe on 29 May, 1920. Mr. Glauert has since collected a third specimen from the same beach, 25 August, 1923.

Cape Petrel (*Daption capensis*).—This species was added to the Swan River list in Mr. Alexander's second paper, wherein he referred to three individuals collected at Cottesloe on 23 June and 26 October, 1920, and 14 July, 1921, respectively. A fourth specimen was collected in the same locality by Mr. Glauert on 20 November, 1922, and on 16 August, 1926, another specimen was received by the Museum from Leighton Beach.

Blue Petrel (*Helobaena coerulea*).—An interesting new record for the district. The Museum has a specimen found at North Fremantle on 26 October, 1921. The only other specimen obtained in the State appears to be that taken by Sylvester Diggles on the south coast in October, 1853.*

Black-browed Albatross (*Diomedea melanophrys*).—Mr. Alexander added this species to the district list in his second paper from a specimen collected by Mr. Glauert at Cottesloe on 21 August, 1920, and which is at present the sole record of its occurrence so far north along this coast.

Grey-headed Albatross (*D. chrysostoma*).—The first specimen of this species taken in the district, at Cottesloe, June, 1917, was included in Mr. Alexander's original paper. In his other paper he mentioned a second specimen found by Mr. Glauert at Cottesloe on 21 June, 1920.

Lesser Noddy (*Anous tenuirostris*).—Though there is a specimen of this species in the W.A. Museum, found on the beach at Fremantle in 1910, Mr. Alexander omitted it from his list. The first severe winter gale to occur in 1924 brought, however, three more specimens to the Museum. On 23 July Mr. Glauert collected one at Cottesloe, and single birds came in from North Fremantle and Guildford. This year again the Museum received a specimen which was taken alive, but in an exhausted and dying condition, at Cottesloe on 23 July. The species breeds on the Abrolhos Island.

**Austral Avian Record,* III., p. 100.

Banded Plover (*Zonifer tricolor*).—In his first paper Mr. Alexander considered this bird to be a new arrival in the area, and stated that it has become established at Pinjarra and Gingin. The Plovers have now made their appearance much nearer Perth. They first came under my notice in grazing paddocks at Cannington (8 miles south of Perth) and Maddington in the summer of 1924. They continued to be seen until the end of May. The following summer, 1924-25, they were in evidence from the end of October to the middle of May, and last summer, 1925-26, from the beginning of November to the end of June. Thus they appear to be summer and autumn visitors at present in the Perth area. They have been heard passing by night over Mt. Lawley, a suburb of Perth, and a friend at the Peel Estate (between Jandakot and Rockingham) writes that they are plentiful there. From all accounts these birds seem to be generally increasing in the south-west.

Oriental Dottrel (*Charadrius veredus*).—A new record for the district. I obtained a specimen while on a visit to Lake Jandakot, a freshwater lake 15 miles south of Perth, on January 14 of this year. It was a solitary bird and was standing on a slab of stone at the water's edge. The Museum, in whose collection the specimen was deposited, has no skins from further south than Pt. Cloates, and apparently the species has not hitherto been recorded in the south-west.

Grey-rumped Sandpiper (*Heteractitis brevipes*).—Mr. Alexander did not include this species in his list, though a specimen is in the Museum; it was collected at Kelmscott in February, 1900.

Black-billed Spoonbill (*Platalea regia*).—A new record for the district. On 3 January, 1924, the Museum received a specimen which had been taken at Herdsman Lake, near Perth. Its occurrence, though it can only be classed as an accidental visitor, is of considerable interest, as it is the first record, not only for the Swan River District, but apparently also for the entire south-west.

Pink-eared Duck (*Malacorhynchus membranaceus*).—A new record for the district. A female was received by the Museum from Wanneroo in February, 1922.

Red-tailed Tropic-Bird (*Phaeton rubricauda*).—A new record for the district. In August, 1925, a specimen reached the Museum from the Gingin Brook, in the north of the district, about 50 miles north of Perth.

Spotted Nightjar (*Eurostopodus guttatus*).—At the end of April, 1923, I flushed a nightjar from the ground in a banksia grove at Maddington. This is the third record from the district.

White-rumped Swift (*Cypselus pacificus*).—Mr. Alexander recorded as the only occurrence of this species in the district a single specimen received from Pinjarra towards the end of April, 1918. On 19 January, 1923, a wet day following on a severe "willy-willy" storm in the north-west, I noticed a considerable number of White-rumped Swifts passing over Maddington, at the foot of the Darling Range, flying southwards. Small parties consisting of rarely more than a dozen birds were noted intermittently all day till about 3 p.m., when the "rear-guard," at least 50 strong, passed over. A solitary pair followed next morning. These birds were calling occasionally. My next record of Swifts was made on January 14 of this year (1926), when, during a visit to Lake Jandakot, I saw a number flying northwards. These kept at a fairly high altitude and uttered no note. There was a " heat-wave " at the time.

Red-capped Robin (*Petroica goodenovii*).—Two instances of the occurrence of this species on the mainland of the Perth district are given by Mr. Alexander. Curiously enough it is the only Robin found on Rottnest Is., 10 miles off-shore. To these I now add two further records, both from Maddington, at the foot of the Darling Range. In early April, 1923, I was aggreeably surprised to see two of these Robins, male and female, on the ground, advancing and retiring before each other as if they were engaged in a dance.* Both birds displayed equal animation, twittering the while. This was near a spring, close to which another female was seen. More than one pair were noted in the locality, they remaining all that month. Twelve months later, in 1924, Red-capped Robins were again observed in exactly the same locality.

Brown Song-Lark (*Çinclorhamphus cruralis*).—Referring to A. W. Milligan's mention of this species, that it was numerous on the undulating sand-hills at Yanchep, in the north of the district, Mr. Alexander in his first paper remarks that it may be resident locally but is certainly uncommon. I agree that it is rather a rare species, but I have noted it in the spring and summer months in open country at Maddington and in grazing paddocks at Cannington.

SUBSEQUENT NOTE BY AUTHOR.

Since the submission to the Editor of the foregoing notes, Mr. F. L. Whitlock has, in the last number of *The Emu*, given an account of sea-birds noted by him at Cottesloe beach during the winter of 1926. Two of his records are new for the district, the Kerguelen Petrel (*Pterodroma brevirostris*) and the Arctic Skua (*Stercorarius parasiticus*)—the latter a sight record. I cannot trace any former references to this Skua being observed around our coast. Mention is also made by Mr. Whitlock of his finding the Lesser Noddy and the Black-browed Albatross at Cottesloe beach, previously known occurrences of which I have given above. The finding of numerous specimens of the Fleshy-footed Petrel (*Pufinus carneipes*) by him on one day is worthy of remark, as only one bird has hitherto been obtained, and of which Mr. Alexander has stated that it constituted the most northerly occurrence of the species on our coast. Later, Mr. Tom Iredale recorded the discovery of a specimen in Ceylon, which he presumed to have reached there from Western Australia (*Emu*, Vol. XXIII., p. 96). Though not in the area, Mr. Whitlock's record of the Roseate Tern (*Sterna dougalli*) from Bunbury is also worth emphasising, as the species is not known to breed or extend further south than the Abrolhos Is. It has never been noted in the Perth district.

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*For record of somewhat similar behaviour on the part of Black-fronted Dotterels, see *Emu*, Vol. XXV, p. 139.

A Review of the Genus *Nesierax*.

BY (MRS.) PERRINE MONCRIEFF, R.A.O.U., Nelson, N.Z.

THIS paper is a summary of a survey of the material on Falcons available in New Zealand, in which the writer has arrived at a tentative theory regarding them. There is no suggestion that finality has been reached ; the desire is merely to clear the ground in order that it may be easier to place facts as they present themselves.

For the purposes of this paper all available skins in the Auckland, Wellington, Christchurch and Nelson Museums have been examined and measured. Mr. R. H. D. Stidolph has sent particulars of skins examined at Masterton. Mr. G. Archey has given particulars of skins in the collection of Mr. E. Stead, Christchurch. Thus it will be seen that, although conclusions drawn from skins are never so satisfactory as from the living bird, yet a fair amount of material has been used. In some cases, as with Mr. Haynes, of the Canterbury Museum, and certain facts from Mr. Stidolph and Mr. Archey, the data received has been taken from birds freshly killed. In addition, the writer has visited the young live bird (Quail-Hawk) presented by Mr. W. W. Smith to the Wellington Zoo in 1926. Unfortunately, in several cases intimation of the sex, size, or locality where shot, was missing.

Of thirteen skins seen in the Wellington Museum, eight, though useful in determining differences in plumage colouration, were useless as helps in determining geographical distribution They were, however, excellent as indications that without some further intimation as to their species (such as a guess by their presenters) no one would like to pick out a pair of Quail-Hawks or a pair of Bush-Hawks.

With regard to living Falcons, the writer has not been able to study a pair at first-hand, though she has caught an occasional glimpse of the smaller type, being witness of an attack on a Pigeon (*Hemiphaga novae-seelandiae*) by the Falcon—the latter launched its attack from a tree, striking the unsuspecting Pigeon like a miniature thunderbolt. Both birds fell to the ground under the force of the impact.

It may possibly appear presumptuous to state that there is but one species of Falcon in New Zealand, against the opinion of two such well-known ornithologists as Buller and Potts. Both of these workers were of opinion that the genus *Nesierax* contained two species, namely *Nesierax novae-seelandiae* (Quail-Hawk) and *N. pottsi* (Bush-Hawk, sometimes known as Sparrow-Hawk). Yet Dr. Leach, in a plea for simplification of classification in his *Australian Bird Book*, says:—"If ornithologists with skins in their hands cannot separate them, what is the use of manufacturing species*?*" This remark should appeal to New Zealand naturalists, when confronted with skins which require labelling or have lost their original label, and attempting to determine whether the bird in question is a Quail-Hawk or Bush-Hawk. One has but to make a heap of skins containing specimens of both species and endeavour to sort them, to find the fallacy of attempting such a discrimination, short of roughly dividing them into large and small, adult or immature birds.

To take two birds, such as a large female and small male, and state good reasons for saying that they were a pair of either Quail-Hawks or Bush-Hawks would be frankly impossible. Nor can it be said why, except for size, they should be considered as belonging to separate species. However, there is no difficulty in separating the adults from the immature birds, seeing that the latter, both large and small, start life with uniform dark-brown upperparts, and as adults have tortoise-shell-coloured plumage formed of light bars on a dark background. There is no difficulty in distinguishing the two groups.

What then is the difference which defines the Quail-Hawk from the Bush-Hawk? Is there a reliable test by which the curator of a Museum can ensure the placing of a specimen under the correct species? Taking the following points in turn, it will be seen that there is nothing definite whereby these birds of prey may be sharply divided into two species:—

COLORATION.—Buller stated that in determining the species it would be seen that *N. novae-seelandiae* (Quail-Hawk) had the bars of the tail more distinct and numerous, with more white about the plumage of the breast and abdomen. Having personally examined over thirty skins, the writer has formed the opinion that it would be impossible to separate the species on this account. These Falcons vary in colour in the individual bird, whether large or small, some being more distinctly marked than others, with more bars on the tail. An equal number of Harrier skins (*Circus approximans gouldi*) would probably show even more variation, though no one would care to say on so light a foundation that there were two Harriers in New Zealand. An examination of the notes of variation (appended) will show that one cannot say that the large type of Falcon has more bars on the tail than the small bird of the so-called Bush-Hawk species. It appears to be if anything a matter of individual variety or age, seeing that in all cases the quite immature bird has a plain dark-brown tail, except under the wing, where the tail will be found to be barred. The barring grows towards the tip of the tail, until in the adult bird the tail is entirely barred. It will also be seen that the young bird starts life with a dark, mottled, chocolate breast, the feathers of which tend yearly to grow lighter, until the breast has a light appearance when contrasted with the immature bird's chocolate plumage. When fading occurs the yellowish markings become white, a fact which accounts for Buller saying that his so-called Quail-Hawk had more white on the breast.

Having found it impossible to discriminate two species from colouring, Buller's statement that the Quail-Hawk has a more glossy appearance is surely not sufficient to warrant two species. There is no doubt that some birds are darker and more glossy than others, but this can probably be accounted for by the condition of the feathers, when much faded by the sun. One has only to turn up the wings to see that those feathers protected from the sun are of an entirely different colour to those exposed to the weather. Also, the glossiness and darker colouring occur in both small and large Falcons.

SIZE.—The question of size, particularly between the male and female Hawk, is of great importance. Were it uniform one might be able to pick out quite easily a large and small species. Reference to the tables (appended) will show, however, that there are birds from fourteen inches up to twenty-one inches, and anything in between, though no male exceeds nineteen inches. Even the measurement of the wing from the flexure varies greatly, the biggest birds by no means always having the largest wing measurement. All one can arrive at is that the female Hawk has a larger wing measurement, no male coming up to eleven inches.

THE BILL.—In examining the bill, there certainly appears to be more finality. Practically all females have a bill one inch long, whilst the males usually measure .75 inch. But were there two species one would expect the male Quail-Hawk to have a larger bill measurement than the small male Bush-Hawk (tables appended).

THE TARSUS.—Here also we find nothing upon which to separate the species as regards size (see table), though at first it would appear that by noting the difference of colour in each Falcon's legs one might come to some conclusion, as in the Auckland Island specimens (see colour table). It will be seen, however, that on the mainland the young birds have grey or blue cere and legs, which when adult become yellow, showing indications that the primitive Falcons were always blue and that a certain degree of specialisation in some modern species is accompanied by a yellow cere in the adult, although the young show the ancestral type. One cannot, however, pick out from a group of skins certain ones and state that they are Quail-Hawks because of having blue or stone legs, or others as being Bush-Hawks because they have yellow legs and cere.

HABITAT.—Buller, giving the evidence of reliable observers, says: "They have always contended that they could distinguish a larger and smaller species, the former . . . . frequenting the open country in preference to the woods." This is the opinion of Mr. R. Gibbs, of Menzies Ferry, South Island—he claims to be able to distinguish the two Falcons in this manner. In the writer's opinion, this point is the strongest in showing the existence of a large and small type of Hawk. Yet this by itself would hardly justify a division into two species, seeing that unless the bird's locality was known, whether coming from a wooded or open area, the skins would still be indistinguishable in the hand. Further, enquiries show that birds of prey by no means remain strictly in one locality. Mr. Stidolph, in a letter (May, 1926) speaking of the large and small types of Hawks, says: "They appear to come down on the plains in the autumn and winter." Mr. O'Donoghue and Dr. J. G. Myers observed a Quail-Hawk of large type flying over the plains of Marlborough in 1924. Presumably this was a migratory bird, seeing that Mr. O'Donoghue, who keeps a record of birds occuring in his province, would have known of its existence had it been a frequenter of those plains all the year round. In the Canterbury Museum there is the record of a large Falcon shot at Arthur's Pass, by no means open plain country. From observations made in the Nelson Province, the writer has formed the opinion that after the breeding season, Falcons moving after food appear in any locality. As most creatures move into lower latitudes with the advent of cold, so do the Hawks follow their prey. It may be suggested, therefore, that were the ringing of birds general in New Zealand, it would be found that these Falcons move northward and southward from one island to the other, after the manner of the New Zealand Harrier, which migrates to Stephen's Island at certain seasons of the year. This opinion is strengthened by the finding of a small Falcon in my grounds about the time of the autumn migration. No bush is nearer than ten miles.

If anything, Buller's statement tends to show that the large type prefers, where possible, to hunt in the open. This is verified by Mr. P. Graham (the well-known guide), who states that at the Hermitage, Mt. Cook, the Quail-Hawks lived in rocky promontories in the neighbourhood, whence thay sallied forth regularly to intercept homing Pigeons, adding that only the small Bush-Hawk was to be found near the Franz Josef Glacier, which is situated in wooded country on the West Coast.

Guthrie Smith, speaking of the small type (or Bush-Hawk), stated in 1921 that this species has actually gained by settlement on his run, owing to the tremendous addition made to its menu by introduced birds. There were some five or six pairs breeding on about 20,000 acres. Since this was written enquiries show that they have left his estate and that he could give no information regarding them. It is, however, worth noticing that he describes these bold little robbers of the small type as dwelling "along the high ranges or on the fern-clad conglomerate ranges," not in the densely-wooded districts. Thus, it can be assumed that the Quail-Hawk and Bush-Hawk cannot at the present time be distinguished from one another by the type of country they occupy.

NESTING.—Reference to the notes on nesting (appended) will show that both birds appear to make the same type of nest, and that no distinct difference occurs whereby the nest can be recognised as belonging to the large or small type.

FLIGHT.—The writer has not been able so far to obtain any first-hand evidence to prove that there is a distinct difference in the flight of the Quail-Hawk when compared with the Bush-Hawk, though the former is stated to have a heavier flight, more like that of the Harrier. There is no doubt that some difference must occur between the way a bird of fifteen inches flies when compared with a bird of twenty-one inches. The difference, however, would need to be specific, such as the number of soars between the wing flaps which distinguishes the Montagu Harrier from the Marsh Harrier. In the case of the smaller Falcon, flight appears to depend on the bird's mood : at times direct and rapid, sometimes soaring with wings motionless, tail outspread like a fan after the manner of the Kestrel, or flying in pursuit of its victim close to the ground, twisting and turning in and out of the trees.

THE FALCON AS A POLYMORPHIC SPECIES.—Seeing that there is undoubtedly a large and a small type of Falcon in New Zealand, the seeker after finality is at first tempted to believe that, as suggested by Mathews and Iredale, the South Island is frequented by a large type and the North Island by a small variety, and that it might be possible to state that there were two species. Research into geographical distribution, however, does not uphold this theory. For, though the majority of Falcons in the North Island are smaller than those of the South Island, yet perusal of the locality chart (appended) will show that we are not justified in giving a sub-specific name to the North Island bird to distinguish it from the South Island Falcon, unless we can find something more definite to go by than size. Geographical distribution does no more than suggest that at one time there were two distinct species.

Mr. R. Gibbs says : " Why is it if the Quail-Hawks are all females (as held by Jennings, late taxidermist Otago Museum) there are no Quail-Hawks here to-day, where twenty years ago there were plenty, and there are still Bush-Hawks ? " The answer the present writer suggests may be found by supposing either that : (1) We have at the present time a polymorphic form in process of breaking up into groups (as suggested by Mr. W. R. B. Oliver) ; or (2) we have a polymorphic form which is in process of standardising into a small type, such as the so-called Bush-Hawk. The polymorphic form might be explained by the possible differentiating of *Nesierax* from the *Falco* group as a large form on the south of New Zealand, producing a smaller species in the north of New Zealand, and subsequently crossing with it. Both of these theories would be in accordance with the description of the New Zealand continent by Mr. Oliver (*Jour. Linnean Soc.*, Vol. 47, 1925), presuming that *Falco*, being a world-wide genus, did not originate in New Zealand, though the age of its flora and fauna might warrant such an assumption.

With regard to the first theory, the writer, with the material available at the present time, has not so far been able to divide the Falcons into any definite groups, such as locality groups, though it will be seen that in the south of the South Island are birds which surpass all others in size. This would suggest that the south has always been the habitat of a much larger bird, which presumably inhabited the New Zealand continent, it being the large type because (a) most true to the original stock, or (b) because of dwelling in cold regions, low temperature having the effect of increasing the size of birds of prey. The Falcons of north Europe are far larger than the southern Falcons.

Possibly the Auckland Island skins are specimens of the large type of Falcon which existed before the New Zealand continent contracted. The present polymorphic form presumably arose when, owing to the contraction of the New Zealand land area, the large and small forms of Falcons inter-bred, the Falcon of to-day being indistinguishable except by size, seeing that the northern and southern birds have inter-bred.

This does not, however, explain the reason why the Quail-Hawk or larger type appears to be fast diminishing in numbers. The solution of the problem possibly lies in the struggle for existence which since the advent of man has confronted these birds of prey. As civilisation advances, changing the face of the country, so the bird of prey finds it increasingly difficult to exist in New Zealand. Too pugnacious to allow human beings to pass its breeding place unmolested, it is gradually becoming fewer in numbers and will be exterminated unless it can re-adjust itself to new conditions. In other words, the type must become smaller, faster, and require less food. Surely this is what is happening! Gradually the larger bird which sought the plains is becoming rarer and rarer, because the polymorphic species capable of producing either large or small birds is gradually conforming to the smaller type, which is more likely to survive—it can seek its food most of the year round, in the wooded country, where man, who every day makes the plains more untenable, has not as yet penetrated in large numbers.

So far it has been assumed that the polymorphic form arose from one original stock entering New Zealand from the south. But there is the possibility of the original stock entering from the north *via* Australia, or that it may have been formed by the fusion of two species which entered New Zealand at different times. Neither of these theories affects the fact that at present we have a polymorphic form of Falcon. Therefore, the writer would suggest that unless fresh data occur on the subject, the genus *Nesierax* should be regarded as containing but one species.

COLOUR.

The immature birds begin by having uniformly dark-brown plumage, including tail, which is slightly barred with yellowish-white under the wings. The second stage is reached when the bird shows signs of faint speckling on the upper surface of the wings. This is what eventually develops into the definite barring like yellowish ripples, which makes the adult plumage appear tortoise-shell. Very gradually the plumage becomes more distinctly barred, the markings creeping up from the wings on to the body and shoulders, finally reaching the head, until in the mature bird the barring reaches from the tip of the wings right up the body to the head as far as the cere; the tail also is barred. There is far less red on the thighs and flanks of the immature bird than the adult bird. Also, in the young there is a very definite black shaft running down the centre of the breast and flank feathers; this gradually becomes less noticeable, until in the adult bird the appearance of the breast is a mottled red, yellow, brown and white, without the black shaft down the feathers. In young birds the red on the thighs is marked with brown, each feather having a patch of brown on the red. In the adult bird the feathers, being red, give a longitudinal impression rather than a speckled appearance.

Table of barring according to size and age :—

6 bars on tail	young bird.
10 bars	small bird, practically mature.
6 bars	large young bird.
5 bars	very small young bird.
7 bars	an old bird.
8 bars	adult large bird.
9 bars	large bird, immature.
8 bars	large bird, practically adult.
9 bars	adult large bird.
8 bars	large adult bird.

Note.—There is no justification for the statement that the feathering in one species comes very much further down the leg than in the other.

SIZE.

Hawks as Labelled in Museums.

Female	Quail-Hawk	Male
		16.5
19.25		15
18		17.5
21		17.5
16.8		16
Female	Bush-Hawk	Male
17		16.5
17.5		16.5
19		15.75
15.4		

It is to be regretted that more birds are not labelled according to sex. The above are all that are labelled according to sex and supposed species. Seeing that the male is never supposed to surpass the female in size, it will be noticed than one female Hawk is smaller than the male.

Wing Measurements, from Flexure, with Reference to size of Bird.

Bird shot at Masterton	17 inches	9.5 wing flexure
,, ,, Raetihi	14.5	9.5
,, ,, Tyneside	14	9.5
Buller collection	16.5	9.75
Bird shot Arthur's Pass	16	10

Wing Measurements.

Female : 11.5, 11.2, 11.4, 11, 11, 11.2, 11.9, 11.2, 12, 11.5, 10.3, 9.5, 10.75, 9.5, 9.5, 10.75, 10, 11.75, 10, 11.75.

Male : 9.1, 9.4, 10.4, 10, 10, 10.3, 10.4, 10.6, 9.25, 9.5, 9.5, 9.75, 9.75, 11.9. (This bird in the Wellington Museum ; query whether N.Z.)

LOCALITY CHART.

South Island.

Female		Male	
19.25	Otago	16.5	Otago
17	Marlborough (young)	15.75	Marlborough
17.5	Marlborough (young)	15	Auckland Isles
18	Locality not known	19	Locality ?
21	Martins Bay, Otago (immature female)	18	West Coast
		19.5	Otago, Chalky Sound
		17.5	Martin's Bay, Otago (adult)
		17.5	South Otago (adult)
		16.5	Nelson
		16	Arthur's Pass

North Island.

Female		Male	
19.25	Mikimiki	15	Masterton
16.25	Locality ?	14.5	Raehiti
17	Masterton	14	Tyneside (East Coast)
19.25	Raetihi		
16.8	Locality ? (immature)		
15.4	Locality ? (young)		

Note.—All skins in Mr. Stead's collection examined by Mr. G. Archey show the northern specimens to be smaller than the southern specimens. There are about eight pairs. These are not enumerated in the above list.

BEAK MEASUREMENTS.

(From tip of Bill to Cere.)

Female: 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, .8, .75, 1, .75, .8, 1.
Male: 1, .75, .75, .75, .75, .75, .75, .75, .75, .75, .9, .8, 1.

TARSIAL MEASUREMENTS FROM BACK.

Female: 2.25, 2, 2.25, 2.25, 2.25, 2.7, 2.4, 2.6, 2.7, 2.6, 2.7, 2.25, 2.25, 2.25, 2, 2.7.

Male: 2. 2, 2.7, 2.5, 2.2, 2.2, 2.3, 2.2, 2.25, 2.25, 2.35, 2.25, 2.25, 2.2.

These measurements are taken from both large and small birds. The writer was not able to pick out the so-called Quail-Hawk by having either a larger bill or tarsus.

TABLE OF COLOUR IN TARSUS AND CERE.

Yellow.

19.25	Female Quail-Hawk	legs and cere yellow.
16.5	Male Quail-Hawk	legs and cere yellow.
17	Young female	legs and cere yellow
17.5	Young female	greenish yellow legs, cere turning yellow from pale blue.
15.5	Male	yellow legs and cere.
17	Female?	legs and cere yellow.

Green.

15 inch	Immature bird, sex ?	legs and feet light sea green.
19·25	?	legs and feet bluish green.
14.5	?	legs and feet bluish green.
14		legs and feet slaty green.

Blue.

15	Male Quail-Hawk (Auckland Islands)	legs and feet brownish cambridge blue. Also around eye.
18	Female	legs and feet brownish cambridge blue. Also round eye.

Stone Colour.

Female Bush-Hawk	greyish legs and cere.
Male Quail-Hawk	legs and feet stone drab. Round eye greenish yellow.
Live Quail-Hawk (1926 four months old)	cere and round eyes stone colour. Cere appearing bluer than legs.

NESTING SITE.

Guthrie Smith, speaking of the Bush-Hawk, or small type, which he calls the "Falcon," says that the sites used by these birds for breeding purposes are varied—at the base of conglomerate cliffs, on limestone ledges, or in wind-blown pumice scoops on the ranges. Potts, in a paper read before the Wellington Philosophical Society, says of the larger type, or Quail Hawk : "Amongst bold rocks on the mountain side, somewhat sheltered by a projecting, overhanging mass, appears to be its favourite site for rearing its young" Buller, describing the nest of the Bush-Hawk, states that this bird nests in a bunch of puwharawhara, often at great height from the ground. Another nest he describes as being in the fork of a tall kahikatea tree. More often, however, he states, its nest is laid on the ground—he mentions one built on the side of a hill below Ruapehu, under cover of a block of trachyte. Mr. R. Gibbs describes the nest of a little Bush-Hawk under a leaning kamahi tree.

Thus, it will be seen that Guthrie Smith's small bird was making a similar nest to that of the large type of Hawk described by Potts. All that can safely be assumed from this is that probably the usual nesting-site for these Hawks, both large and small, is on the ground, but that when a suitable spot cannot be found, these birds accommodate themselves to their surroundings and build in trees after the manner of the Kestrel and Sparrow-Hawk.

THE NEST.

Potts, speaking of the Quail-Hawk, says: "The efforts of this bird in the way of nest-building are of the feeblest description." Buller states of the Bush-Hawk : "There had been no attempt to form a proper nest, but the ground was covered with feathers of birds, on which the Hawks had fed, almost all of Ground Larks."

Guthrie Smith corroborates this when stating that the New Zealand Pipit seemed to be the species most often taken, though he states that the nesting material of the Bush-Hawk varied, being sometimes merely ferruginous pebbles below a cliff, trodden-down fern fronds and grasses, or when built on the windswept pumice ranges, merely grit.

Nesting of Jacky Winters.—The gentle and friendly Jacky Winter or Brown Flycatcher (*Microeca fascinans*), a well-known visitor to the vegetable and flower gardens about Sydney, does not, as a rule, make its tiny shallow nest near the ground. Indeed, where the trees are tall the nest is generally placed so high in a lofty eucalypt that it cannot be located unless the bird is seen flying to or from the nest or sitting on it. For the past two seasons, however, a pair of birds at Wahroonga have made their nest in a rose bush at a height of about 3 feet from the ground. The rose plant, an old one with main stems thick and barked, provided suitable forks for holding the little concave nest.—H. WOLSTENHOLME, Wahroonga, Sydney (7/3/27).

The Snowy Albatross Again.

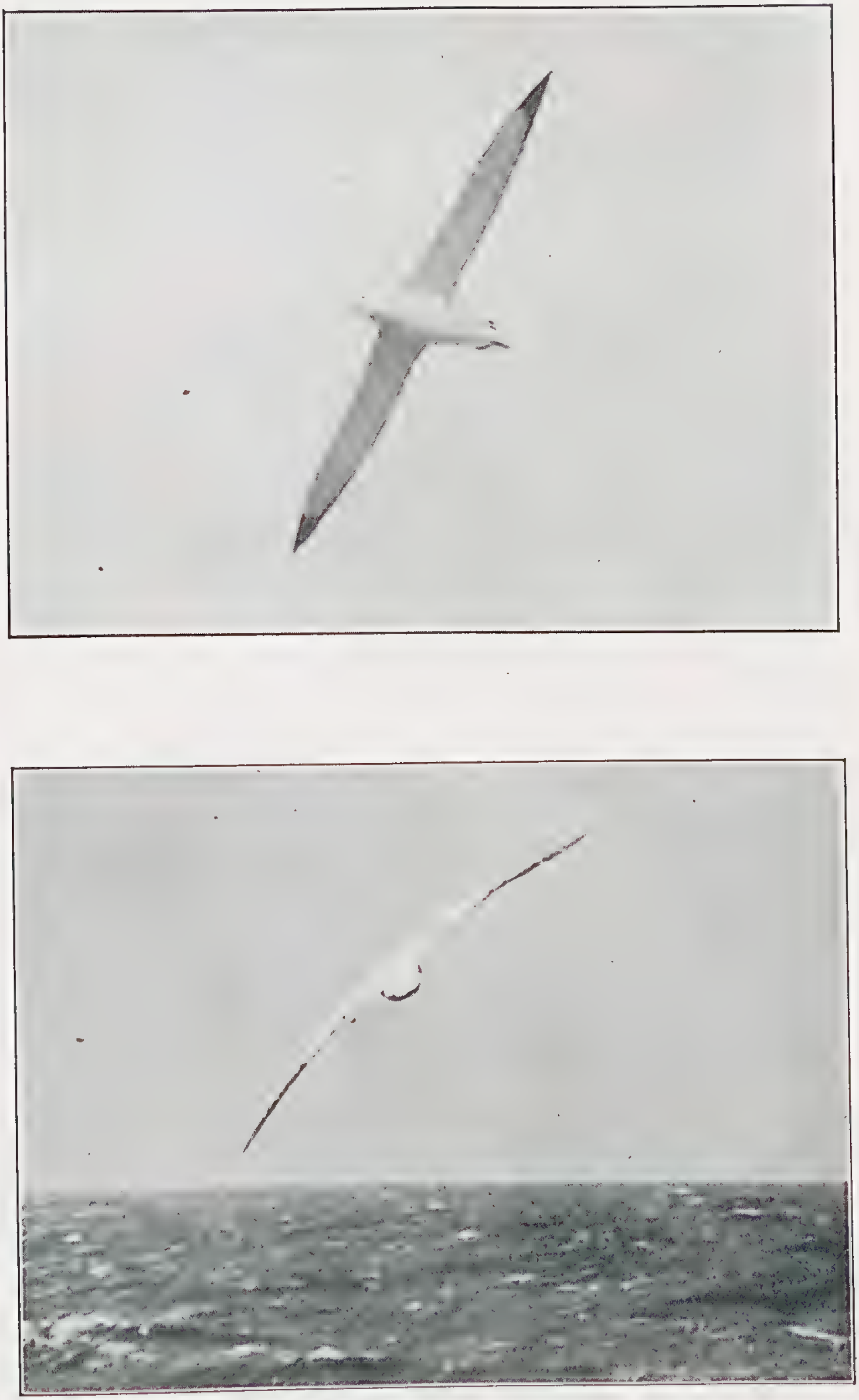
BY TOM IREDALE, M.B.O.U., Sydney.

RECENTLY, while voyaging to and fro between Lord Howe Island and Sydney, Mr. E. F. Pollock spent some time photographing the Albatrosses met with. He was very successful and some of his pictures are here reproduced. These appear to confirm my observations that the Snowy Albatross is a constant wanderer over east Australian seas. The photographs selected show characteristic stages in the flight of Albatrosses and Mollymawks.

There is a large series of sea-going birds whose nostrils are developed as tubes on the surface of the bill, and these have been classed together under the name Tubinares. These birds vary in size from small birds, not much larger than a Sparrow, to the largest of flying birds, having a wing expanse exceeding twelve feet. The large ones are known as Albatrosses and Mollymawks, though one other tube-nosed bird, the " Nelly," reaches the size of the smaller Mollymawks.

All are of southern range as regards the Atlantic and Indian Oceans, but a colony has been isolated in the North Pacific Ocean ; the latter does not concern us, though one was previously included in the Australian List through inadvertence.

Of the southern forms, two groups (perhaps three) have been confused by cabinet ornithologists, though a third has been generally allowed. The observer who meets these birds in nature never confuses them, and they were separated as distinct groups by the earliest unlearned sailors when first met with. Thus, the name Albatross is regarded as a corruption of the Spanish word *Alcatras*, used for the biggest bird known to them, the Pelican. Seeing these huge birds and not being ornithologists, the natural thing for them to do was to use the name they knew. In a similar way, the word Mollymawk is derived from the Norse *Mallemucke*, the name given to the Great Black-backed Gull of the northern seas. This name must have been provided either by a Norseman sailing in the Portuguese or Spanish ships or else by a Latin who had sailed in the northern seas. It is a most appropriate name as the coloration and size of the two birds is comparatively similar. In recent years the name has been commonly corrupted into " Mollyhawk," through the Hawk-like sailing and swooping of these birds behind the ships. This introduction is made because when these birds are seen by the land-lubber on his first voyage he immediately hails them as Albatrosses, to find himself at once scathingly corrected—" Them's not Albatrosses ; them's Mollyhawks ! " In scientific circles the two have been commonly confused, but never in nature.



SNOWY ALBATROSSES, TASMAN SEA.

Photos. by E. F. Pollock.

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Of true Albatrosses, then, two or three different species may occur in east Australian waters, and the commonest appears to be the most recently recorded one, the Snowy Albatross (*Diomedea chionoptera* Salvin). The common Albatross was known as the Wandering Albatross (*Diomedea exulans* Linné), as it was met with in the open sea far from land. It was reputed to fly night and day and accompany ships practically around the world. This myth is not yet quite dead, though it appears almost unfounded. A few instances are on record of long-distance flights of these birds, but in most cases these were due to circumstances over which the birds had no control, and not due to choice. The third species, the Royal Albatross (*Diomedea epomophora* Lesson) breeds on the sub-antarctic islands of New Zealand.

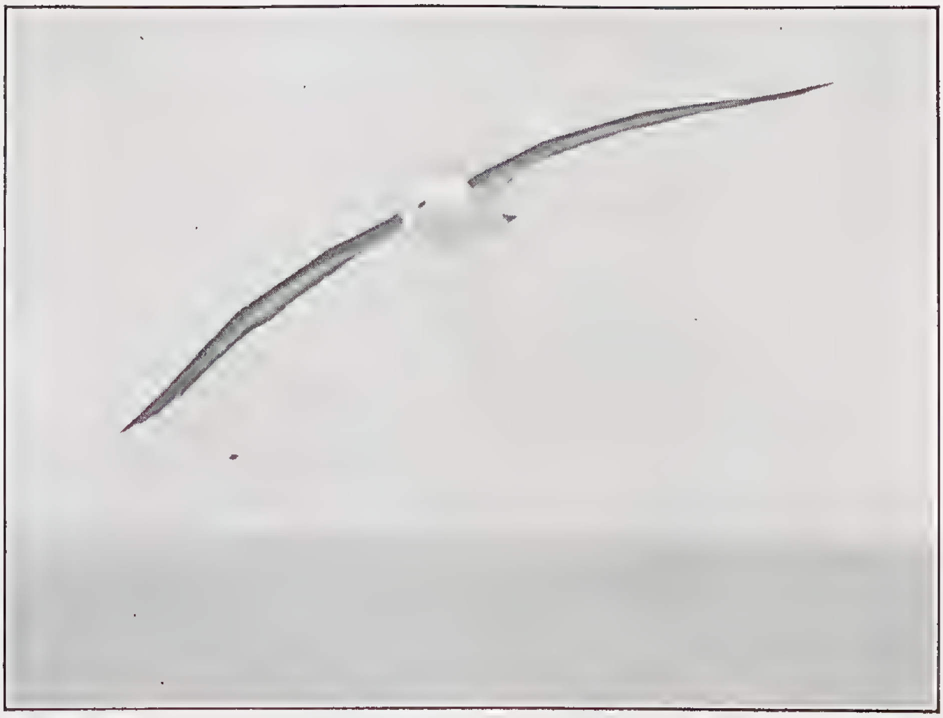
The distinguishing characters of these species may be indicated here. These are the largest of flying birds and their wing expanse may go over twelve feet. The measurement of the wing from the carpal joint is nearly five feet, and the largest specimens have not been yet measured. Apart from their size, the true Albatrosses when adult are mostly white; some of the juveniles, however, show an almost uniform brown feathering, and the birds passing from juvenile to adult a mottled phase. The Snowy Albatross is reputed to be the largest; when adult it is almost snow-white in coloration, the tips of the wings alone retaining some brown coloration. The tail is practically pure white, the tips only having a touch of brown and this generally confined to the side feathers. The Wandering Albatross, when in perfect plumage, has notable speckling on the back, the wings mostly dark-brown above, showing sometimes a small white shoulder-patch and the tail completely brown at the tips, generally brown throughout. The immature birds, as above noted, may show all states of brown and white coloring, both above and below. The immature young of the Snowy, as far as is known, has no completely brown stage and only differs from the adult in the amount of brown on the upper surface of the wings. The bill is bright waxen-yellow in the adult, dull brownish-horn in the young. The Royal Albatross has the white coloration of the Snowy, but lacks the whiteness of the wings above. These are mostly brown with a marked white shoulder-patch, but the tail is always white.

When the dead birds are examined the Snowy and Wandering Albatrosses are seen to have very hooked bills, the hook being pronounced through rising rather suddenly from the culmen. In the Royal Albatross the hook is much weaker and more depressed. This feature is not easily understood without comparison, but when really seen is at once recognizable. Fortunately, the birds are very tame when they enter the harbour (Sydney), and close examination of many birds has always shown the very hooked bill of the Snowy species. The Royal Albatross may visit Port Jackson, but has not yet been noticed.

The difficulty in connection with these birds is that no known breeding-place of the Snowy Albatross is nearer than Kerguelen Island, yet the continued presence of this kind of bird suggests some home nearer than that. Albatrosses of the large kind are known to breed on the Chatham Islands, and it may be that these birds come from that locality. The Wandering and Royal Albatrosses breed on the sub-antarctic islands of New Zealand, and the birds met with in the Tasman Sea may belong to these breeding localities. Thus, from a superficial outlook, the Royal Albatross should be a visitor to Australian coasts. From these large birds a series of half a dozen smaller species is separable, and two of these give no trouble to observers, as they are wholly dark-colored and have a distinct mode of flight. These are the Sooty Albatrosses, known to sailors as Cape Hens, never Albatrosses nor Mollymawks. Two species separable by means of coloration and also by the color of a line in the bill may occur in southern Australian waters, but rarely in the Tasman Sea as far north as Sydney. The Sooty Albatross (*Phoebetria fusca* Hilsenberg) is practically a uniform brown with a pale-yellow line along the sides of the lower mandible. This species has the most northern range of the two, but no breeding-place is known in Australasian waters. The Grey-mantled (Sooty) Albatross (*Pheobetria palpebrata* Forster) differs in its pale grey mantle and in having a blue line on the mandible. This species is known to breed on Macquarie Island, but there is no definite record from Australian waters.

The Mollymawks proper are three in number, the commonest being the Black-browed Mollymawk (*Diomedea* (*Thalassarche*) *melanophrys* Temminck and Laugier), which is the one seen in the photograph. It is easily separated from the Albatrosses in nature by its smaller size and shorter, more curved wings, its white head and rump, its black back, and upper side of wings and tail ; the under side of the wings is as seen in the photograph. There is little difference in the coloration of the three Mollymawks, save as to the bill, but by means of this feature they can be easily separated. The juvenile plumage also differs little, mainly in the dusky greyness of the head and neck and also in the bill coloration. Thus, the Black-browed Mollymawk has the bill uniform orange in the adult and dusky horn in the immature. The Yellow-nosed Mollymawk (*D.* (*Thalassarche*) *chlororhyncha* Gmelin) is recognisable by its bright yellow culmen (top of the bill), contrasting with the black sides, and is a more delicately built bird. In the juvenile the bill is wholly black. The Grey-headed Mollymawk (*D.* (*Thalassarche*) *chrysostoma* Forster), has the head washed with pale grey and the top of the bill is pale yellow, but the sides of the bill are blue and there is another pale yellow line along the lower edge of the lower mandible. When young the bill features are duller, but the head is washed with dirty brown, and the bird is more heavily built than the preceding. Breeding places of these Mollymawks are little known, the first named in the sub-antarctic islands of New Zealand, the others unknown as regards Australasian waters. Yet the Yellow-nosed Mollymawk is nearly as common as the Black-browed, at some times and places even more abundant. The Grey-headed Mollymawk is one of the rarer species, but may occur more commonly than has been reported.

A species known as the Shy Albatross by some, an excellent name, or the White-capped Albatross by others (*D.* (*Diomedella*) *cauta* Gould)



ABOVE, WANDERING (?) ALBATROSS; BELOW, BLACK-BROWED MOLLYMAWKS. BOTH PHOTOS. TAKEN IN THE TASMAN SEA.

Photos. by E. F. Pollock.

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is the only form yet known to breed in Australian seas, and its breeding-place is in Bass Straits. It is a large " Mollymawk," with a flight more like that of an Albatross, and rarely comes near the ship's stem, while the true Mollymawks are cruising close in. It is soon picked out on account of this shyness, its large size, and its dull head with a pale blue bill.

From the foregoing it will have been gathered that there is not much known of the life-history and habitats of the Albatrosses and Mollymawks frequenting the seas of Australia. There may be many breeding-places yet undiscovered—for instance, in the Recherche Archipelago—and it has been suggested that a colony of these birds haunt the Mewstone, a rock south of the Maatsuyker Group. It is curious, and needs emphasis, that apparently two birds that occur not uncommonly in east Australian seas, the Snowy Albatross and the Yellow-nosed Mollymawk, have no known breeding-place nearer than Kerguelen Island and the Atlantic Ocean.

The Grampian Range of Victoria and Its Bird Life.

By EDWIN ASHBY, F.L.S., R.A.O.U., Blackwood, South Australia.

THE GRAMPIAN RANGE is situated in western Victoria about meridian 142° 30″ and between the 37th and 38th parallel. The northern extremity at Mt. Zero is due north of the southern extremity at Mt. Sturgeon, but the range is bent westward, with Mt. William, 3830 ft., as the centre of the bend and the wings trending north-west and south-west, respectively. The total length of the range is 60 miles and the greatest breadth is about 30 miles. The rocks are sandstone, with quartzite and intrusive rock in a few places. It differs in several respects from any other range I have visited in Australia.

From the great length of precipitous face on the eastern side and the gradual slope westward I assumed that the elevation was due to faulting, but Professor Sir Edgworth David, in the Federal Handbook of Australia, 1914 (pp. 258, 265, 266), ascribes the uplift to folding, the formation being almost entirely sedimentary sandstones, perhaps Devonian or Lower Carboniferous. He suggests its correlation with the Mansfield shales, in which fossil (*Lepododendron australae*) occurs, but as no fossil indications have until quite recently been met with in the Grampians, the true age of its sandstones must remain uncertain.

The greatest elevation is reached on the eastern side in Mt. William, 3830 ft., and Mt. Rosea, 3095 ft., but this eastern face must originally have been very much higher. The original mass has during the ages been cut into narrow valleys, running more or less north and south, the ridges between rising above the floor of the valleys 1000 to 2000 feet.

The upper portion of these walls is a sheer cliff for several hundred feet, the actual summits often being immense blocks of detached sandstone weighing hundreds of tons each and apparently waiting for the first earth-tremor to send them hurtling into the valley bottoms. Lateral streams have in parts cut narrow gorges crosswise; but for these one would have great difficulty in getting out of the main north and south valleys. Comparatively little damage has been done to the vegetation by fires, one of the chief factors in the destruction of fauna and flora in Australia. The greater part of the area is still virgin bush. Except in the bottoms the soil is too poor for agriculture, and thus the advent of man has not been as disastrous to the fauna and flora as is usually the case. The whole area, with the exception of the blocks already alienated, has been declared a faunal reserve.

Botanically the range is an ecological islet, rising abruptly out of hundreds of miles of undulating plains. Westward the nearest ranges of anything near the same altitude are the Mt. Lofty Ranges near Adelaide, and eastward the Great Dividing Range and the Cape Otway Hills. Its flora illustrates the meeting of east and west. Here the beautiful *Boronia pinnata*, which is such a favourite near Sydney (growing there almost down to sea level) is very local and only occurs at an altitude of about 2000 ft.; here it attains a height of 6 to 8 ft., while in New South Wales it is quite a dwarf shrub. The handsome orange-red *Grevillea oleoides*, which in N.S.W. is a dwarf shrub with linea leaves, has in the Grampians large broad leaves. It occurs only on the summits of a narrow ridge known as "the Eastern Wall." Another handsome member of the same genus, *G. rosmarinifolia*, which grows to a large bush in N.S.W., re-occurs as a dwarf bush near the summits of the two highest mountains. The very showy member of the Epacridae (*Astroloma conostephioides*), which is common near my home in the Mt. Lofty Ranges in South Australia, finds its extreme eastern limit in the Grampians, where its tubular scarlet flowers decorate the landscape. The charming blue tinsel lily (*Calectasia cyanea*), which is common in Western Australia, and almost entirely skips the southern State, re-occurs in the Grampians. Another peculiarly Western Australian dwarf liliaceous plant, *Borya nitida*, also re-appears in this range. These brief citations will suffice to demonstrate the fact that here survivals occur of both the present extreme eastern flora and also of the extreme western flora.

In further support of the statement made earlier, that the Grampians may be rightly described as an ecological islet, I would point out that at least 16 species of shrubs are endemic to the Grampians. Specimens of most of these I collected on the occasion of my visit, and now have growing in my garden. The wealth of flowering shrubs met with in this range is undoubtedly a factor of great importance to its bird-life. No less than 17 species of the showy Papilionaceous shrubs known as *Pulteneas* are here met with, four being endemic to the range. *P. rosea* (*sub-alpina*), is confined to Mts. Rosea and William, at or over an altitude of 3000 ft., although a few examples straggle along the banks of the creeks to a little lower level. This shrub, forming a bush 4 ft. in height, is a wonderful sight with its masses of rose-coloured flowers set off by its dark-green foliage. The other three endemic forms, *P. Benthami*, *P. Luehmanni*, and *P. costata*, each differ widely in character, but all are of exceptional beauty. One must refer to the showy bauera (*B. sessiliflora*), which, as its name implies, has a ring of showy red blossoms at each leaf node. This species is so distinct from other members of the genus that one wonders how it was evolved. Are these endemic forms survivals that have in all other localities entirely disappeared, or have they been evolved in this favoured spot during immense periods of isolation?

GRAMPIANS BIRD LIFE.

The foregoing remarks will suggest the nature of the problems that still await solution in this exceptionally interesting region. Has any specialisation taken place in the avi-fauna at all comparable with that of the flora? Is this region a meeting-place of east and west in the same sense as it is botanically? My contribution towards the answering of these questions is of necessity a very small one for the following reasons :—(a) My time was limited to a bare fortnight from the 10th to 23rd Oct. 1925; (b) the whole of the Grampians, except the alienated blocks, is a declared sanctuary; (c) the permit given to me for the Grampians only allowed of the taking of examples from four named genera, and limited to two pairs of each.

Every scientific man is aware that the field-glass is utterly inadequate for the determination of sub-specific differences and unreliable for specific determination of many species. In face of these limitations, I was compelled to specialise on the botanical side, and was able to make an unusually interesting botanical collection, which I have sent to my friend, Dr. A. B. Rendle, of the British Museum. I cannot conclude this paragraph without expressing a wish that a wiser conception of Australian ornithology will in time be developed. The Grampians may be considered a province, still mostly in its virgin condition, parts still untrodden by man, possessing a wealth of flowering shrubs and in suitable localities teeming with bird-life. Surely permits should be granted to approved scientific workers for the carrying out of research work, for such work has never been a menace to native fauna, but is invaluable in adding to man's common stock of knowledge.

The cottage where our party stayed was in Hall's Gap, a wide, flat-bottomed valley shut in on the one side by the precipitous " eastern wall," and on the other by the peaks that form the summits of what is known as " Wonderland." The large swamp that at one time filled the base of this valley has been drained and the original vegetation, in which, I was informed, Emu-Wrens (*Stipiturus malachurus*), used to be fairly common, has disappeared—and the Wrens with it. Away from the swampy ground much of the big timber is still standing, and the mountain-sides and banks of the mountain streams are covered with tall bushes.

On the morning of 19th Oct., at 5.45 a.m. the Pied Bell-Magpies (*Strepera graculina*) commenced calling, and for a full hour (to 6.45

a.m.), when the sun shone into the valley, scores of these remarkable vocalists were calling continuously. The notes were very loud and withal musical. I jotted down the following words as suggestive, "Quick-quick-beware," the last sound much drawn out. Scores of birds in the immediate vicinity were continually answering one another, sometimes as many as half a dozen in a single tree. Now and again several birds would depart from the usual formula, and produce a loud, musical, long-drawn-out whistle. Also, at times the notes became more guttural, which may be suggested by the birds, "Clunck-clunck-beware." At 6.45 a.m. the performance as a concert ended. The birds seemed then to scatter; at any rate, the calls became much less continuous.

It was noted that not once during this hour did any bird utter the "squeaking-cart-wheel" note which is so characteristic of *S. melanoptera* in South Australia and of *S. arguta* in Tasmania; but during the day, now and again, birds making this call were heard away back in the forest clothing the mountain slopes. During the earlier part of my stay I concluded that there must be two species of *Strepera* represented, but later on I felt doubtful of this; owing to the restrictions placed upon one accurate determination was impossible.*

While the Bell-Magpie concert was in progress a pair of White-backed Magpies (*Gymnorhina hypoleuca*), with their two young were hunting for grubs a few yards from the observer. The parents were continually warbling and piping and the young incessantly calling for food. The old birds when bringing luscious morsels walked on the tips of their toes in a peculiar mincing manner. At 6.45 a.m., when the sun rose, the Grey Shrike-Thrush commenced whistling, Fan-tailed Cuckoos called, and a couple of Laughing Kookaburras competed with one another in hilarious outbursts.

At Stawell, only 16 miles away from the Grampians, the commonest Honeyeater was *Meliphaga fusca*; the Eastern Rosella (*Platycercus eximus*) was common; and the beautiful Yellow-tufted Honeyeater (*Meliphaga melanops*) was noted. This is probably the extreme limit of their range westwards, for none of these were seen on the range.

The following species were recorded in one note-book, but I fear that several common species may have been unrecorded owing to the call of botanical interests:—

Wedge-tailed Eagle (*Uroaetus audax*).

Peregrine Falcon (*Falco peregrinus*).—For some time we watched the splendid flight of this bird as it soared immediately below us as we gazed over the precipitous face of Mt. Difficult, at that spot said to be 1800 ft. above the plain. No doubt the bird had its nest on the crags below.

Musk Lorikeet (*Glossopsitta concinna*).

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* Since writing the foregoing I have learned from Mr. A. G. Campbell that the Grey Bell-Magpie (*S. versicolor*) does occur there, and I have seen a skin of that species from the Grampians in the H. L. White collection.

Little Lorikeet (*G. pusilla*).—Both these were noted from time to time flying high overhead from one part of the forest to another; it was thought that both *G. porphyrocephala* and *Trichoglossus moluccanus* were also represented, but identification owing to height was uncertain.

Yellow-tailed Black Cockatoo (*Calyptorhynchus funereus*).—These birds were seen on several occasions, especially flying high in the evening, no doubt returning from some distant feeding-ground.

Gang-Gang Cockatoo (*Callocephalon fimbriatum*).—This bird was met with wherever the taller timber grew, but always in small flocks of less than half a dozen; this is probably the extreme western limit of their regular range.

Crimson Rosella (*Platycercus elegans*).—Very numerous.

Laughing Kookaburra (*Dacelo gigas*).

Sacred Kingfisher (*Halcyon sanctus*).

Fan-tailed Cuckoo (*Cacomantis flabelliformis*).

Horsfield Bronze-Cuckoo (*Chalcites basalis*).

Grey Fantail (*Rhipidura flabellifera*).

Willie Wagtail (*R. leucophrys*).

Restless Flycatcher (*Seisura inquieta*).

Brown Flycatcher (*Microcea fascinans*).

Scarlet Robin (*Petroica multicolor*).

Flame Robin (*P. phoenicea*).

Southern Yellow Robin (*Eopsaltria australis*).—This and the ten preceding species were all numerous, especially along the valley. The Yellow Robin is met with in the south-east corner of South Australia, where I saw it near Millicent in 1889, and specimens have more recently been obtained by Professor Cleland. With this exception the Grampians form one of the limits of its range.

Golden Whistler (*Pachycephala pectoralis*).

Rufous Whistler (*P. rufiventris*).—Both these species were very numerous in the valley bottom, where the Nightingale-like notes were on fine days continually heard.

Grey Shrike-Thrush (*Colluricincla harmonica*).

Black faced Cuckoo-Shrike (*Coracina novae-hollandiae*).

White-fronted Chat (*Epthianura albifrons*).—Only in open valley bottoms.

Brown Thornbill (*Acanthiza pusilla*).

Buff-tailed Thornbill (*A. reguloides*).—Referred to again later.

Yellow-tailed Thornbill (*A. chrysorrhoa*).

White-browed Scrub-Wren (*Sericornis frontalis*).—Referred to again later.

Superb Blue-Wren (*Malurus cyaneus*).
White-naped Honeyeater (*Melithreptus lunulatus*).
Eastern Spinebill (*Acanthorhynchus tenuirostris*).
Tawny-crowned Honeyeater (*Gliciphila melanops*).
White-eared Honeyeater (*Meliphaga leucotis*).
Crescent Honeyeater (*Phylidonyris pyrrhoptera*).
Yellow-winged Honeyeater (*Meliornis novae-hollandiae*).
Noisy Miner (*Myzantha melanocephala*).
Little Wattle-Bird (*Anthochaera chrysoptera*).
Red Wattle-Bird (*A. carunculata*).
Red-browed Finch (*Aegintha temporalis*).
Australian Raven (*Corvus coronoides*).
Pied Bell-Magpie (*Strepera graculina*).
White-backed Magpie (*Gymnorhina hypoleuca*).

CABINET NOTES.

Acanthiza reguloides.—One example only was collected, just outside of Hall's Gap, at the foot of the range. Sex not determined. It corresponds with the sub-species described by North from the writer's specimen under the name *australis*, from the Mt. Lofty Ranges, in the darker colour of the upper tail coverts and base of tail feathers ; but it differs in having a white, unfreckled throat and in the absence of the rufous-olive freckling of the forehead and olivaceous wash of the crown. It seems distinct in these respects from any skins I have compared it with. One hardly feels justified in considering it a distinct sub-species on the evidence of a single example, but I suggest that if these distinguishing characters are sustained by additional material this race be known as *A. reguloides grampianensis.*

Sericornis frontalis.—Two pair of skins were made, which prove in the case of one of the males to be the same form as that found in the Mt. Lofty Ranges (not Port Adelaide, as stated in the Checklist), and was named by Gould, *S. osculans.* The two males from the Grampians have the ground colour of the chin and throat white, the centres of many of the feathers jet-black; while one of the examples has less of this streaking than does the topotype in my collection the other skin has this streaking three times the width—altogether a most striking variety. The upper-side of this is also distinctly greyer in both head and mantle.*

Strepera graculina.—Earlier in this paper I have described the congregations of this bird in Hall's Gap, and given some particulars of their vocal performance. On no other occasion during our stay was a similar performance staged by the Pied Bell-Magpies. Local residents stated that entertainments were considered a precursor of rain, and sure enough it was so in the case cited. While a few birds were about during the greater part of our stay, and the "Quick-quick-beware" calls from time to time were heard, never again did the clans gather in the manner described. Towards the end of our stay we met with nesting birds miles back from the valley of Ryans Creek. At the foot of Mt. Difficult, some 10 miles north-west, we saw scores of these Bell-Magpies. There must be thousands—perhaps tens of thousands—of these birds in these ranges, and they constituted the most attractive feature of the bird-life to those of us who came from the central State where this species is not found.

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* See further note on p. 314.

One did not like to shoot these birds on the private holdings in Hall's Gap, and only in one spot outside the range proper were they seen. The result was most unsatisfactory, for the three examples secured turned out to be all females. I learnt that in the fruit season numbers of this *Strepera* are shot by those who have orchards, because of the damage done by them to the fruit. Also, a resident near our cottage was much troubled by the Bell-Magpies stealing fowls' eggs, and had in consequence destroyed a number by means of a small rifle. But as none of these fatalities occurred after I became acquainted with the fact, no further examples came my way.

Description of specimens :—Example marked A.—Throat pale rufous-brown, the same shade extending as far as the chest as a wash with centres of feathers pale ; the rest of underside lightish-grey ; forehead, face, neck and mantle dark brownish-grey ; edges of feathers in mantle light coloured, partly due to wearing, lower two-thirds of feathers in mantle whitish-grey ; tail and wing feathers brownish-grey.

Example B.—Throat similar to A, but rufous wash less marked on chest ; rest of plumage similar to A, except that head, neck and mantle are a little darker.

Example C.—Chin, throat and lower neck brownish-grey, rufous colouration absent ; rest of underside grey, each feather broadly tipped with brownish-grey ; forehead, crown, face and upper neck brownish-black ; rest of upper surface grey, but distinctly darker than either A or B ; tail and wing feathers also darker.

These skins are widely different from specimens I have collected at Black Spur, in Victoria, Woodford in the Blue Mts. (N.S.W.) and at Torrington, in the N.S.W. highlands near the Queensland border. They were compared at a meeting of the S. A. Ornithological Association with the skins in the S.A. Museum, and their lack of correspondence was so marked that they were considered to constitute a very distinct race. I suggest that in future this race be recognised under the distinctive name of *grampianensis.*

In a female skin from Woodford, N.S.W., there is a narrow, central, rufous wash down the throat, but here the correspondence ends. All the three skins, A, B and C, show a good deal of fretting at the tips of the tail feathers—the birds had probably already brought off one brood and all appear to be equally mature birds. Although 34 years ago I saw this *Strepera* in the Cape Otway Ranges, I have never examined a skin from there, and therefore cannot determine the degree of relationship that may exist between Mathew's *Neostrepera* *versicolor riordani* and the form from the Grampians. It certainly appears that this race has for a long period been isolated in that extreme western extension of its range.

ADDENDA.—Since the completion of the foregoing paper it has been my privilege, in company with Messrs. A. J. and A. G. Campbell, to compare the three skins described herein with the splendid series contained in the H. L. White collection in the National Museum, Melbourne. (Incidentally, I take this opportunity of acknowledging the debt ornithologists owe to Mr. White, for placing such a fine collection at the service of all workers). We found that the Cape Otway birds are similar to those from the Grampians, and two examples, from Rutherglen and Burnley respectively, both in Victoria, are very close. But all these are quite distinct from the black form common to northern New South Wales and Queensland. This black form seems to extend down the eastern ranges from Queensland as far as the Black Spur in Victoria. Elsewhere in that State, however, it is replaced by the greyish form known as *Strepera graculina riordani*. Mat.; accordingly the name *grampianensis* is still-born. Probably the very grey character of this race led Mathews to place it originally under *versicolor*.

Bird-Life in the Capricorn Group.*

BY J. A. EDGELL, R.N., Commander H.M.A.S. *Moresby*.

H.M.A.S. *Moresby* visited Mast Head Island in August, 1926, and several officers landed and walked round the island. Comparatively few birds were seen, it being too early for the spring migration, and the teeming thousands which were a feature of the island in December, 1925, were conspicuously absent. A wisp of Dotterel or Sandpipers was noticed at the east end of the island, and a few Silver Gulls and Reef Herons were busy searching for food on the off-lying coral.

Mast Head island was re-visited in December of 1926. The usual influx of feathered visitors had then taken place, and young birds were hatching out all over the island. Countless numbers of Noddies, Terns and Shearwaters were seen and heard, and the mournful note of the latter was almost too much for the nerves of a puppy of nondescript breed, which was landed with a camping party from the ship, for a few nights. When visiting the island in December, 1925, the numbers of Terns noticed did not seem very great. In 1926, however, they were in thousands, and when disturbed at their nests they rose and hovered over the southern point. Their appearance resembled a " dust-devil," or small sand storm, such as is frequently seen in northern autumn along the banks of the Suez Canal.

The Terns in 1925 and 1926 chose the same area for their egg-depot; it can scarcely be called a nesting-ground, as no attempt at furnishing it is in evidence. Whether they are influenced in their choice by the incidence of the wind, the exposure to the sun, or other natural phenomena, I am not prepared to say. To all appearances there are many equally suitable locations; possibly, however, these are pre-empted by other birds.

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*Communicated by the Great Barrier Reef Committee, Brisbane.

Visits were made to North West Islet, Tryon, Wilson, Wreck, and Heron Islands and Erskine Islet. In the last-named a noble White-headed Sea-Eagle was observed, also a few Herons. The Eagle's nest, evidently used again and again, was propped against a tree-trunk for support, and was some seven feet high, being built up from the ground. The majority of Eagles seem to prefer a crag of rock as inaccessible as possible, and unless the White-headed Sea-Eagle is by habit a builder of ground nests this fact would appear remarkable; it may be due to the absence of snakes and other vermin on the islets of the Capricorn Group.

At none of the islets was there such teeming bird-life as at Mast Head, though in several of them the vegetation is precisely the same.

A Lesser Frigate-Bird was seen off Mast Head Island on two occasions in December, and one at Holborne Island earlier in the year. It is a curious fact that I have never yet seen more than one of these beautiful fliers at one time on the Queensland coast, whereas in North Borneo, particularly in boisterous weather, it was not uncommon to observe a flock of eight or more large Frigate-Birds sailing majestically along the edge of the coast at a height of some 500 feet. The Australian bird, though of course much larger, has the flight and general appearance of the Swift so often seen in England in the summer months; the sweep and proportion of the tail feathers are particularly alike.

A solitary Swallow or Martin flew round the ship off Mast Head Island.

Whilst at anchor on the north-west side of Hook Island, in September, I was much interested to see three birds which I took to be a variety of Godwit. They were about the same size as a Curlew, somewhat smaller in the body, and with short, rather flattened bills. The plumage was speckled brown, with a white streak along the wing in a fore and aft direction. The walk resembled a strut; the feet were not webbed so far as I could see. These three birds were fairly tame and were probably on passage, as I did not see them again after the first day. An exactly similar but solitary specimen was seen at Long Island, in Broad Sound, in November, and a short account of its unusual behaviour may be of interest.

I was ashore with a party of six people on the extensive sand-flats which front the east side of the island at about 6.30 one morning. A 5-chain steel tape was being unwound and laid along the sands, and the party was variously engaged over an area of two or three hundred square feet. I then noticed a Godwit moving towards us. Its approach was unhurried, unconcerned, and I watched with amazement this intrepid advance, expecting every moment that the bird would take fright and fly off. Not a bit of it! With stately strut, it approached to within 20 feet of Lieutenant-Commander N. A. C. Hardy, who was holding one end of the steel tape, and when this officer " shooed " it away, it merely turned its back on him and proceeded a few yards further along the line of the tape. By this time all hands had become interested in this curious bird—curious in two senses, as the sequel will show. Having arrived at a satisfactory strategical position, about midway between the ends of the tape, the Godwit decided on a closer investigation, and, with the evident object of sizing up the situation, carried out a careful examination of the unusually long breakfast which seemed to be spread out before it. Then, having decided that the opportunity was not one to be missed, it commenced a frontal attack. The first assault was easily repulsed. The second was more firmly pressed home, possibly owing to the fact that the texture of the " worm " was more fully realised. The third attempt resulted in a firm grip being obtained, and as there seemed some chance that the tape would get kinked in the struggle, I hastily hauled out my end of it and lifted from the ground the portion near the bird. The Godwit, which was still intent on its gargantuan meal, proceeded to attack the tape in the air, and it was not until it had been passed over its head a couple of times and had come in contact unexpectedly with its neck and long legs, that the bird decided to retire—which it did in the same leisurely, off-hand manner as at its approach. An appropriate name for this particular specimen would be " Lackwit," for a more stupid-looking creature I have seldom seen.

A most interesting flight of birds from Mast Head Island was observed in the early morning of 9th December. The ship was passing between the island and Polmaise Reef, there being at the time a strong S.E. breeze against which the ship was making about 8 knots. The birds were leaving the island in large flocks, and the different methods employed by Noddies and Terns in searching for food were noted with great interest. The Noddies fly very low over the water, and in a long, thinly-held line. A very rough guess at the number in the flock which I particularly observed would be 2,000. I suppose they covered an area 3,000 feet long and 100 feet wide, the line of advance being that of the major axis. The birds were approximately 10 feet apart and the line, never very even, about 5 deep. At first the Noddies were spread ahead and on each side of the ship. Then, suddenly, a group away on the left got on the track of food, and direction was changed as if by magic to the left front. Later, the centre began to follow some small fish in a direction leading astern of the ship; the two wings rapidly conformed to this change of direction, and so the game went on. The general advance, however, was the same as that of the Terns and other birds, *viz.*, in a south-easterly direction.

I have often noticed in the afternoons large flocks of Noddies a few miles outside the entrance to Port Curtis. In calm weather near the Capricorn Islands it is not at all unusual to see flocks of Noddies in a dense clump, hovering for a considerable time over a shoal of small fish. They do not seem to spread and search for their food in the same way as they do when there are a stiff breeze and rough sea.

The waters round the islands swarm with small fish about the size of whitebait, numbers of which swim only an inch or so below the surface and are thus an easy prey.

The Terns' method of searching for their food is entirely different to that of the Noddies. They appear at starting to have a definite purpose and journey in front of them, and it is not until fish are seen that the foraging nature of the expedition becomes obvious. At a distance of a mile, and with the early morning sun shining on them, a gathering of Terns over a shoal of fish resembles a fountain in play; at first, in fact, I thought a whale was blowing close to Polmaise Reef, and it was not until I had looked through a pair of binoculars that the real cause of the white cloud was ascertained. An interesting feature of the display given by these Terns was their movement in a body in conformation with the movements of individuals.

The leaders of the flight, having sighted fish within reasonable distance of the surface, led the way to the attack, and were followed by the remainder in close or open formation, according to the size of the shoal of fish. Directly the onslaught started the birds began to come down to the water in turn as they arrived close to the position. Sometimes the dive was a lucky one; sometimes it was an obvious miss; and again there were occasions when the game was not afoot. Whatever the luck, the eventful procedure was the same—the bird took its turn, hit or missed as the case might be, and passed onwards and upwards until clear of the oncoming flight; then it wheeled back down wind and hovered in the rear till its turn came for another try. The whole action was most regular and orderly as seen from a distance. The movement of the flight as a whole was quite definite, but the most marked feature was the individual flight of units, which gave a rotary effect and is probably characteristic of the species.

In spite of their evil reputation, no one can help admiring the Silver Gulls, and it is but seldom that a ship goes to sea without an escort of these excellent scavengers. On some of the small fishing villages about the coast of Devonshire the sanitation and health of the place are to a large extent attended to by the Silver Gulls. This is particularly so where fish are landed on the beach and where there is no jetty or fish market. There, the offal and useless fish are dumped on the shingle, and the ever-watchful Gull clears up the mess as soon as, and often before, the fishermen move away. In one village the unwritten law that the Gull is a protected bird there is sternly enforced. I have seen a fisherman administer justice with a hard and horny hand on lads who, after due warning, have persisted in throwing stones at these birds. Often they will fly within a few feet of the ship and one has excellent opportunities to study their appearance and admire their graceful poise. Surely, unless there is food to be fought for, these are the least hurried birds in the world, and they are always in beautiful plumage, or seem to be.

Several Shearwaters, no doubt blinded by the electric light, flew on board when the ship was at anchor off Mast Head Island. One even descended a hatch and took refuge in a cabin. On one occasion, when wind was blowing hard from the S.E., several young birds were noticed evidently learning to fly and getting accustomed to the water. A curious thing about these birds is the bedraggled state of their tail and wing feathers when they take to the water. A Shearwater and a Gull sitting in the water close to one another present a very different appearance; the former looks miserable, half-drowned; the whole of its tail feathers are under water and its ragged-looking wings spread out with a pathetic droop. Presumably the wings are kept spread to dry in the wind and sun—they evidently get very heavy, as on several occasions birds rose a few feet into the air, flapped their wings perhaps half a dozen times, and came down very clumsily into the sea again, often getting much wetter than they were before.

I did not witness this personally, but one of the officers of the ship informed me that he was watching the movements of an Oyster-Catcher and noticed that in taking off from the water it made no attempt to make headway, but merely spread its wings and allowed the wind to carry it aloft.

Fragmentary Bird Notes.

By G. A. HEUMANN, R.A.O.U., Beecroft, N.S.W.

LOOKING back many years, when in the west, I remember seeing a remarkable sight which I could describe almost as the dancing of a quadrille by White Cockatoos. It was about 5 o'clock a.m. when, sitting behind a shrub, I saw a flock of White Cockatoos alight upon two trees about 50 yards apart. Evidently their sentinels did not see me, for soon the two parties flew from tree to tree in and out of each other. There must have been quite 30 exchanges that way before one of the sentinels spied me; he at once gave a signal and they all made off.

While I was staying with friends on the Tweed River, a Satin Bower-Bird would come regularly in the morning to pluck the newly-opened violets, take them to his bower close by, and proudly display with them in his bill to the hen. They will do the same in an aviary, always selecting blue or purple for the colours of display. I do not know what is the theory for their preference for blue or purple, but to my mind it is the lovely purple in their mates' eyes which impresses itself on their minds.

I was astonished once to find that a female Variegated Wren (*Malurus lamberti*) had two husbands, for both cocks were feeding the young and mother. A similar observation was made by a friend, who showed me a nest of a Superb Wren with two males attending on the hen and the brood.

Of course, it is not all joy in the bird-family. They have their trouble as well. On several occasions I had young birds which were attacked by a huge, conical-shaped maggot, similar to a bottle tick. This parasite was embedded in the skin and flesh, and only by touching the back part, which was slightly raised, could one see that it was a parasite and alive. In removing it with a pin quite a huge hole was created, but the birds never seemed any the worse for it.

For a bird to be egg-bound is generally considered a trouble caused through confinement. That is not so. A free Wood-Swallow once flew to the ground close by us ; she evidently was suffering, for she was quite helpless. Taking the bird home, I gave her a drop of oil and soon set her right again—she laid her egg, and when released flew away quite joyously.

Generally speaking, Kookaburras are looked upon as great benefactors, because they are supposed to kill snakes. They prefer, however, a more dainty diet. During the nesting season of my Cape Barren Geese, I saw a " Jackass " swoop down and fly off with one of the eggs stuck in his bill. Kookaburras also visited a Peewees' nest in a big gum tree in my paddock and very coolly helped themselves to the young, which evidently had just hatched.

I have never seen a bird blush, but I have certainly seen birds turn pale. When some Orioles were caught on a mulberry tree, that beautiful scarlet patch on the bare skin of both sides of the head instantly faded to a pinkish white, and it took quite a long time before they recovered their normal colour. Later on, when re-catching them in the aviary, the same thing happened.

One wonders why birds will hatch Cuckoos' eggs when (I am sure), they know of the Cuckoos' habits. During springtime one can see daily Cuckoos being chased by different kinds of soft-billed birds, especially the Yellow-tufted Honeyeater, whose nest the Fantail Cuckoo looks upon with the greatest favour. It certainly looks very grotesque to see these large and ever-hungry baby Cuckoos being fed by foster-parents not a quarter their size, and which must work overtime to satisfy the rapacity of their foster-child.

Of course, in captivity the study of birds is much more simple and extensive—firstly, because the birds themselves are much more fearless, and, secondly, because they are confined to a limited space. In many instances it brings out traits of character and habits which are not apparent when the birds are at liberty. For instance, my pair of Sea-Gulls showed every sign of nesting, and the hen really did sit very closely ; but when no results were apparent, and the nest, despite great protest by the Gulls themselves, was examined, I found she had been collecting the empty shells of snails and was trying to hatch them ! Again, a Californian Quail had laid about 20 eggs which a hen Virginian Cardinal tried to cover and hatch.

Some birds are exceedingly attentive and affectionate to their mates during the breeding-season. My male Princess Alexandra Parrot would never allow the hen to eat for herself, but would drive her away from the seed, and, after having filled himself well, would feed her. The hen of an African Mourning Dove suddenly died on the ground. The cock bird sat alongside the corpse the whole day, and even after I removed it he remained there till he died next day.

A pair of Curlews nested with me, but our tame "Jackass" took a fancy to their eggs. The Curlews never forgave him for that, and when opportunity offered some time later they not only scalped him but actually tried to drown him, and he was only rescued in the nick of time!

The same Kookaburra had a habit of calling a wild one and then grabbing and holding it until some one took it from him.

I have often watched Plovers, Curlews, and my tame Kagus tap the ground and then, after listening for a second or two, extract from the earth a worm or other insect. It would be interesting to know if it is the sense of sound, sight or touch which enables them unerringly to catch the grub. The same question is raised in the following case: A friend living in the interior, a place visited by an aeroplane, tells me that her Corellas give notice of the arrival of the aeroplane long before it is seen or heard by the people.

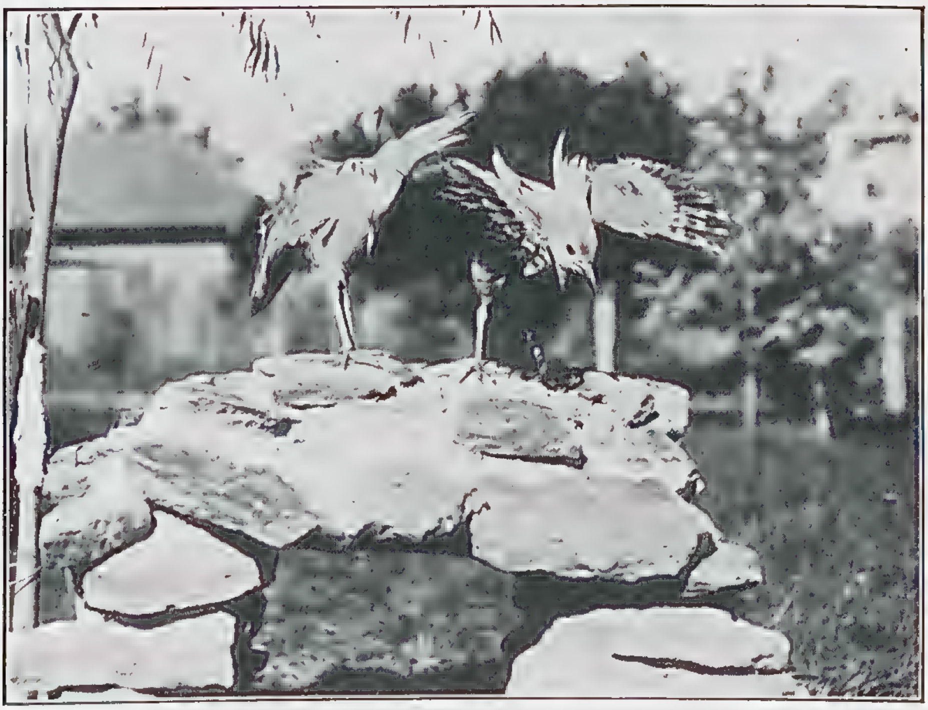
During a minor operation on a small Finch, not wishing to hurt it, I tried petrol as anaesthetic, and I found that inhalation of just a little will keep the bird under control for three to five minutes; it acts just like chloroform on humans.

One is often asked, Do birds think? A pair of Whydahs had built a hanging but very flimsy nest—the bottom especially was very slovenly built and one could count the eggs by just looking at it. One morning the eggs (almost hatched), had fallen through the bottom. The birds remedied their mistake; they wove a new and very tense bottom on the old nest!

The flat nest in a box of a pair of Parrakeets became wet owing to rain leaking through the top of the box. The birds built a dome over their nest inside the box and it served the purpose. A Bronze Partridge once took a great liking to a tiny Siskin. Whenever I served meal worms, before eating any himself he would call his little friend —also a cock bird—who thoroughly understood the call-note, and make him partake of the worms first. This Partridge, by the way, an expert ventriloquist, acted as "food adviser" to the whole aviary. Making experiments with different kinds of grubs and caterpillars, he would always give a warning call to the other birds if the offering was distasteful—and they invariably paid proper heed.

It is a great pity that many people appear to be hostile towards aviculture. The rarer species of Parrakeets could be bred most assuredly in numbers if aviculture were not looked upon as vandalism. Turquoise Parrots are supposed to be almost extinct. As a fact, when I lost my cock bird of this species I had to pay £30 for another specimen. Out of the young which I reared, my friend, Mr. Harvey jnr., of Adelaide, who has a pair of them, again reared eight young this season in two broods of two pair each. Mrs. Mellor, of Adelaide, bred about a dozen Princess Alexandra Parrots; so also did Mr. Lienau. Out in the open these birds have not nearly the same chance, as Hawks especially cause havoc amongst them. But catapults and pea-rifles and the scientific and unscientific egg-collectors do their share in the speedy extermination of anything that

CAPE BARREN GEESE AND YOUNG IN A SYDNEY GARDEN (1926).



KAGUS (FROM NEW CALADONIA) DISPLAYING IN MR. HEUMANN'S GARDEN, SYDNEY.

Photos. by G. A. Heumann.

NATIONAL MUSEUM MELBOURNE

may be rare. In England aviculturists are assisted by the Zoological Gardens; and that is as it should be, because it is recognised that Zoologiacl Gardens are purely for show and that real observations and breeding attempts should be made in private aviarives unless a Government institution for such purposes exists. I Australia the case is different, and it is much to be regretted that obstacles are placed in the way of our getting birds to observe and to study.

Breeding of Cape Barren Geese.

BY G. A. HEUMANN, R.A.O.U., Beecroft, N.S.W.

NOT many years ago the Cape Barren Goose (*Cereopsis novae-hollandiae*) was exceptionally plentiful along the south-west coast of Australia; but conditions have changed with them as with many other Australian birds, and to-day a pair is rarely seen in a wild state. Around Esperance Bay the children would hunt the young ones uphill; to-day there is none left in that district. Mr. A. S. Le Souef, of Taronga Park Zoological Gardens, told me that the species is rapidly becoming extinct. And yet they breed easily and prolifically.

The pair I possess was sent to me by the late Mrs. Roberts, of Hobart, about seven years ago. They were young birds, and not until they were three years old did they lay their first eggs. These, unfortunately, were not fertile, but in the two following seasons I reared four young ones each time without any trouble. This year (1926) although the eggs were fertile, no young ones appeared, probably on account of too early breeding during very changeable weather, in June, the breeding season being generally in August.

The site selected for the nest is beneath a bush, and it is interesting to see the hen breaking off branches, from 6 inches to 12 inches long, putting them all in a heap, and then using them when she wants them, as foundation and for the sides of the nest. It is not a big structure but looks cosy enough after she has plucked herself of the down in which she completely buries her eggs. The incubation lasts 40 days, and is only carried out by the goose; the gander generally stands nearby to see that nothing interferes. Both Geese are very pugnacious during this period, and will attack anything most viciously. A stray fowl quickly becomes a dead bird.

Young Cape Barren Geese are exceptionally pretty. A broad black stripe runs from the base of the bill to the tail; then come two white stripes and two black stripes again. The underparts are creamy white. As the gosling advances the black becomes gray, the white a dirty white, until little by little they all show only gray. It takes rather more than six months for the birds to lose their baby feathers.

The flesh of these Geese is very dark and appears to be bruised, and unless they are very young the meat is tough and dry.

As pets in general, if it were not for their pugnacity, Cape Barren Geese would be ideal. They will follow one anywhere, and one could perceive no pleasanter sight than a clutch of these Geese with their goslings. I feed my birds on hot bran and pollard-mash in the morning and wheat in the afternoon. They also get, of course, as much green stuff as they like, this being their natural food. It is a pity that the public cannot see a family of this species at the zoo, when they are so easy to breed.

The Belltrees Oological Collection.

BY A. J. CAMPBELL, C.M.B.O.U., ETC., Melbourne.

TAKING advantage of the R.A.O.U. holding its Annual Meeting in New South Wales, and by the kind permission of Mr. H. L. White, I had an opportunity of viewing the progress of this celebrated collection.

The collection is enclosed in one large cabinet, 8¼ feet in length, 4 feet in breadth, and 4½ feet in height, and is built of Queensland maple (*Flindersia oxleyana*), which under the polishers' art is yellow ochre in colour, beautifully mottled and striped mahogany red. There are eight divisions (four on each side back to back) which in all contain 137 drawers, 22½ x 19 inches in dimensions, graduated from 1½ inches to 5½ inches in depth. The knobs of the drawers are made of yarrem wattle (*Acacia homalophylla*, native to the Belltrees estate), and when polished are nearly as hard and black as ebony.

Time and space utterly fail to explain all the unique and valuable specimens among the thousands of clutches, but a general and brief sketch may be given of the Cuckoos. There are about 600 " combined clutches " ; *i.e.*, sets containing both eggs of the foster-parent and of the Cuckoos, which are among the most interesting of wonderful exhibits.

All Australian Cuckoos have not been observed methodically hatched from the fosterer's nest; therefore there is necessarily some uncertainty about the parentage of the strange egg in many cases, although from circumstantial evidence, or by analogy, it is possible that the proper parent has been correctly named.

Both Mr. White and his painstaking assistant, Mr. S. W. Jackson, are to be commended for the excellent and artistic arrangement of the specimens. Each clutch has its own history, more or less elaborate, written in a special reference book. The following is an example :—" The only Bronze Cuckoo I have seen here (Cardwell) is *L. russatus*. One was clinging to the nest of *Gerygone magnirostris* in which was a freshly deposited egg of a Cuckoo, and later I obtained a young bird being fed by a Gerygone. I consider there is not a shadow of a doubt that *russatus* lays a green (bronze or olive) egg, and that the egg already sent in the set of *Gerygone magnirostris* belongs to that bird (Cuckoo)—H. GREENSILL BARNARD, 4/12/25."

It would appear that four of the small Bronze Cuckoos all lay uniform olive, or bronze-coloured, eggs. Some degree of certainty may be narrowed to *L. plagosus*. Two others (*L. russatus* and *L.*

minutillus) are northern species and not so well known, while it is probable that the New Zealand migrant (*L. lucidus*) does not lay in Australia.

The Narrow-billed Bronze Cuckoo (*Chalcites basalis*), which is of a different genus to the others, lays a white egg, red-speckled. Considering the numerous fosterers it is, in general resemblance to most of those of the fosterers, noticeably so in the *Acanthizæ* and *Maluri*. However, this light-coloured egg is a striking contrast with the dark olive egg, say, of *L. plagosus*, which egg is often found in the same nest with the speckled egg of *basalis*.

Among the 10 or 12 species of Australian parasitical Cuckoos it is difficult to propound any scheme of " natural selection." In many cases (14 in the collection) the same species of fosterer has been imposed upon by no less than five different species of Cuckoos. However, the field can be narrowed in the case of the Black-eared Cuckoo (*Mesocalius* (= *Owenavis*) *osculans*). In every case of the four " selections " its egg is almost identical with that of the fosterer.

With the Koel (*Eudynamys orientalis*) the assimilation is especially good, particularly with the Friar-Birds (*Philemon*). With a clutch (3) of Orioles (*O. sagittatus*) eggs, the Koel's egg is darker like the fosterers, while in a clutch (2) of Victoria Rifle-Bird's eggs, the Koel's egg has large blotches and the same tone as on the fosterer's.

The egg of the great Channel-billed Cuckoo (*Scythrops*) in a remarkable degree resembles that of a favoured fosterer, the Pied Currawong (*Strepera graculina*).

In the Pallid Cuckoo (*C. pallidus*) assimilation in general is good, particularly as regards the Honey-eaters, but is strongly opposed, both in colour and size, in such cases as the Shrike-Thrush (*Colluricincla*), Cuckoo-Shrike (*Coracina*), and Oriole. In 120 sets in the Belltrees Collection 35% of the strange pinkish eggs are more or less slightly spotted here and there over the surface.

Both as regards colouration and size the most striking exceptions of the Fantailed Cuckoo (*C. flabelliformis*) are in the cases with dark eggs, notably the Pilot-Bird (*Pycnoptilus*), Shy Ground-Wren (*Hylacola cauta*), Field-Wren (*Calamanthus fuliginosus*), Redthroat (*Pyrrholæmus*), &c. But it will be noted that all these nests are domed or covered in.

If there be a semblance of " clans " in the " selection " of fosterers, by the Cuckoo (or *vice versa*), it is more strongly suggested in the ample series of different fosterer clutches containing the egg of the Brush, or Square-tailed, Cuckoo (*C. pyrrhophanus*). This Cuckoo lays in a wide range of habitat. Excepting " accidentals " the clans may be divided into three :—

(1) Fosterers, Robins the most numerous, with the ordinary type of the Cuckoo.

(2) Fosterers with Flycatcher type (toned like *Rhipidura*) of the Cuckoo. These are chiefly seen in the north-western habitat.

(3) Fosterers with the lightest type (white with few spots) of Cuckoo and often indistinguishable from those eggs of a Honey-eater (*Gliciphila modesta*), one of the fosterers.

The Little Wattle-Bird *(Anthochaera chrysoptera).*

BY H. WOLSTENHOLME, M.B.O.U., Wahroonga, Sydney.

THE Little Wattle-Bird (before the new Checklist the Brush Wattle-Bird) is one of the larger species of the big Meliphagidae family of Australia—a slim bird with a rather long tail, suggesting the Cuckoo in figure ; of sombre but showy appearance, with its brown plumage plentifully overspread with light markings. In distribution it ranges from South Australia (including Kangaroo Island) through Victoria, Tasmania and New South Wales to southern Queensland.

As a rule it keeps to the bush and rarely visits gardens. In various parts of New South Wales I have come across the species in considerable numbers—not flocks, but scattered birds—notably at Sussex Inlet (near Jervis Bay) where I found the birds nesting ; along the North Coast, where at one place (Nambucca Heads) I found myself among such a large and noisy company of them that for the time being no other bird note could be heard and I was glad to hurry on to quieter surroundings ; and in the *Banksia* tracts of the National Park and Kuring-gai Chase, Sydney—always away from the habitations of man. But about the North Shore suburbs of Sydney it has now joined the large class of Honeyeaters that visit gardens. In these parts two ornamental trees are widely grown whose flowers are sought by honey-loving birds. The gorgeous red blossoms of the so-called coral trees (*Erythrina*) from earliest spring, and later on the brilliant flowers (also red) of the indigenous bottle-brush (*Callistemon lanceolatus*) attract a varied collection of honey-bird visitors, and among them the Little Wattle-Bird is now seen every year.

Perhaps it was in order to be near a supply of this kind of food that a pair of these birds forsook their favourite *Banksias* and *Callistemons* of the neighbouring bush and made their abode in my garden. Presently they began to build a nest in a large shrub (*Photinia serrulata*), sometimes called Chinese hawthorn, not far from an *Erythrina* tree, then covered with blossom. I realised that nesting had begun by seeing the two birds flying eagerly across the garden bill to tail—that is, one bird's bill apparently touching the front bird's tail. This particular habit I have noted in other Honeyeaters, *e.g.*, the Regent Honeyeater (*Zanthomiza phrygia*) (see *Emu*, XXIV., 118). though the practice of the male bird attending his mate when she is nest-making is a common one with many birds besides Honeyeaters. The first bird, the female, carried a thin twig to the nest just begun. The male would sit a little way off, frequently in the same spot, while she arranged the twigs in the growing structure, and proclaimed his joy in raucous tones until she left for more material, when he would go with her. Such were mostly the proceedings until the nest was finished. She alone appeared to do the building. His assistance seemed to be merely the encouragement that might be given by his presence and his vocal powers. On short flights they would spread the tail (which the Regent Honeyeater also does) and show its conspicuous white tips. They would also glide little distances on motionless wings, extended and revealing the beautiful orange colouring, unseen except during flight—whence comes the specific name (*chrysoptera*) of this species, as well as of the Orange-winged Sittella (*Neositta chrysoptera*).

The calls of these birds are among the least agreeable of Australian bird notes, being loud and harsh, jerky and discordant. They resemble at times the squawk or cackle of a domestic fowl, and are often accompanied with a peculiar clattering of the mandibles and raising of head and tail. The male is the noisier, and throughout the nesting period he keeps up his noise with little cessation from daybreak until dusk. John Gould says the natives gave the name "Goo-gwar-ruck" to the bird in imitation of its note. He adds: "It frequently jerks up its tail, throws back its head, and distends its throat as if great exertion was required to throw out these harsh and guttural sounds." Perhaps it was only natural that my family used to make uncomplimentary remarks about the "singing of that bird of yours," and a neighbour said jokingly that he was going to shoot it!

The nest occupied about a week in the making—on the outside a loosely-made, untidy-looking affair, similar in size, form, and appearance to the nest of the Whip-Bird (*Psophodes olivaceus*). It rested securely in a fork of the shrub before-mentioned some 10 feet from the ground. The open, cup-shaped inside, 2½ inches in diameter by 1½ inches in depth, was smoothly lined, bottom and sides, with freshly shredded red eucalyptus bark, which is the lining material commonly used by this Honeyeater. This nest had, in addition, at the bottom of the cup fine threads of glossy red-brown appearance that might have come from around the young fronds in the centre of a tree-fern that grew close by.

Two eggs—the ordinary clutch—of the usual honeyeater-egg colour, salmon ground with red-brown spots and markings at the top, were laid. They hatched in about twelve days. The chicks were very downy but soon were covered with feathers showing the adult markings, which became quite clear before the young birds left the nest. They were fed by both parent birds, the male being distinctly the larger.

Always "a bold and spirited species," the birds showed these qualities in a marked degree when the nest and nestlings had to be guarded. During that time no bird, large or small, could come to the vicinity of the nest without being attacked at once and driven right away. Even the Lewin Honeyeater (*Meliphaga lewini*), the chaser-general of small birds, had to depart, and we could not help being amused at seeing him in this new role—the chaser chased!

To each other the two birds showed great affection. They reminded one of the Beaver and the Butcher in *The Hunting of the Snark* (Lewis Carroll)—"You could never meet either alone."

Whether sipping at the drinking-bath, or preening their feathers close by, or feeding in loquats or the juicy *Erythrina* flowers, maybe hanging therefrom head downwards like Lorikeets, or honey-seeking among apple-blossoms, they were always in each other's company, and when together at the nest they would engage in loving conversational chucklings.

The young birds went on growing rapidly after leaving the nest, and soon became as large and as smoothly feathered as the old birds. They remained with the parent birds for a week or two, spending much time among the ripe loquats and the *Callistemon* and other blossoms, and became hard to identify unless the old birds could be seen feeding them.

A word or two as to the name. The Red Wattle-Bird (*Anthochaera carunculata*) a larger bird, is similar in many respects, particularly in plumage. It has conspicuous red wattles. The Little Wattle-Bird has *no* wattles. The proposed genus *Anellobia* (Cabanis, 1851) for the " no-wattle " bird—the name means having no wattle—expressed this. Surely a bird called a Wattle-Bird should possess wattles ! Is it right to apply the name Wattle-Bird to one that has no wattles, even though it resembles another bird that does possess them ? It has been called the Mock Wattle-Bird, and there is something to be said in favour of this name, if it means that the word " wattle " is incorrectly applied.

Family Life of Black-breasted Quail.

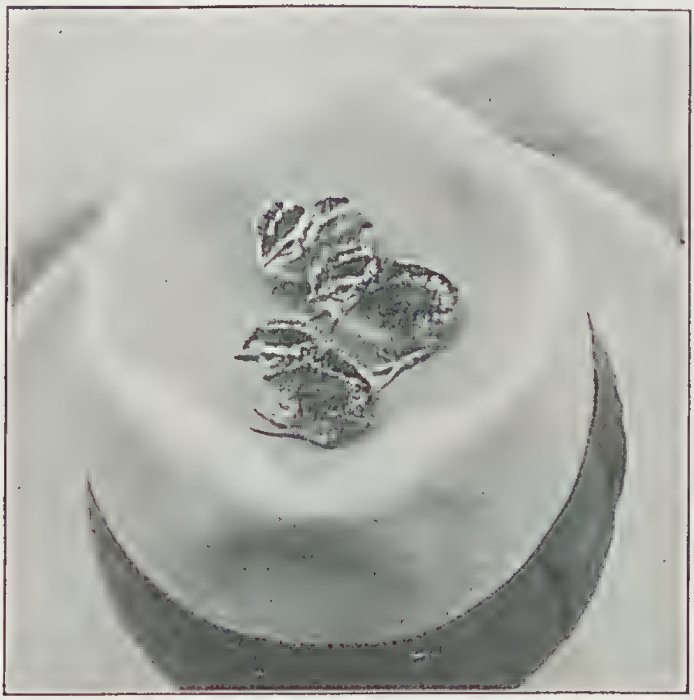
By C. H. H. Jerrard, R.A.O.U., Gayndah, Queensland.

The accompanying photograph of a very young brood of Black-breasted Quail (*Turnix melanogaster*) was obtained by me last November, and at the same time I gained some interesting knowledge of the parental habits of the male of this rare and secluded species.

I discovered Black-breasted Quail in July, 1924, in " scrub " (jungle) near my home, and observed several of them about the same spot many times afterwards ; but I saw no signs of their breeding till I made the lucky find represented in the photo. The manner in which the tiny jungle-babies were secured for a picture is, I think, worth describing to readers of *The Emu*.

On 8th November I was exploring the scrub, with Black-breasted Quail as my chief objective, when I suddenly noticed one of these birds run quietly from a spot just ahead of me. It was the same spot, fifty yards or so in from the edge of the scrub, where I first saw the birds in 1924. As this one moved away and I followed for a few steps, I noticed that it was not seeking cover, and thereby quickly eluding me as usual, but kept itself well in view as if inviting pursuit. This unwonted boldness suggested that the well-known ruse of ground dwelling birds when an enemy approaches their nest or helpless young was being employed, and I looked for a nest at the spot the bird had left.

Though I found none, I could see that my search was causino anxiety to the bird. It wandered restlessly round, allowing me to see it plainly and distinguish it as a male by its mottled breast and white throat. I stood quite still, and it was evident that this was just what I was required not to do. Determined to attract notice, that I might be enticed to leave my station and pursue him, this usually shy and timid bird advanced to within five or six yards of me, emphasizing his presence by such actions as scratching the ground, crouching and rising again, and uttering low, clucking sounds expressive of anger or impatience. Again and again he repeated these manoeuvres, clever enough, no doubt, when used against his ordinary enemies, but worse than useless when opposed to human reason. I waited—and watched. I think half an hour at least elapsed before my patience was rewarded. Then a movement, as of a small brown leaf on the ground, caught my eye. I looked at the leaf, and it resolved itself into a wee, striped downy thing—a baby Quail. When I picked it up it cheeped but did not struggle. While I examined it, its parent showed greater concern than ever. At a distance of less than three yards from me, he performed the actions which I have already described, pleading eloquently for the lives of his offspring by his courageous disregard for his own.



BABY BLACK-BREASTED QUAIL.

Photo by C. H. H. Jerrard.

My second and third captures, representing, with the first, probably the full brood, were effected in the same way. The well-camouflaged little creatures, perfectly invisible when still, at length revealed themselves by movement. I had been within a few feet of them all the time. They made no attempt to escape, and when in my hands were very quiet; but when I placed them in my hat on the ground they chirped vigorously and tried to jump out.

After some consideration, I decided that, although my captures were evidently very young, it might be possible to rear them in captivity, and that it was worth while to make this attempt, so that, if successful, I might present my specimens later to some zoo or aviary. Accordingly, but not without some compunction, I left the parent-bird in his distress and carried the young ones home in my pocket. I placed them in a box, with some soaked bread crumbs round them; but they would not touch the food and appeared very discontented in their prison.

Next morning they looked more than half dead. Lacking the warmth of their parent's body, they were benumbed with cold, though it was a mild November night and their box was indoors. When placed in the warm sunshine they recovered sufficiently to pose for the photograph, but I gave up the thought of rearing them, and decided to restore them to their natural guardian. So, after fixing one of Mr. Cohn's rings loosely on a leg of each, I carried all three back to the scrub and placed them exactly on the spot where I had found them.

The vivacity they immediately displayed surprised me. A moment before they had been semi-torpid; now they became brisk and animated. They set up a vigorous and penetrating chirp in chorus, ran about together, and even scratched and pecked for food. They did not, however, leave the place where their parent had left them the day before. I did not see him when I restored the young ones, but if he were about the spot he must soon have been attracted by their calls.

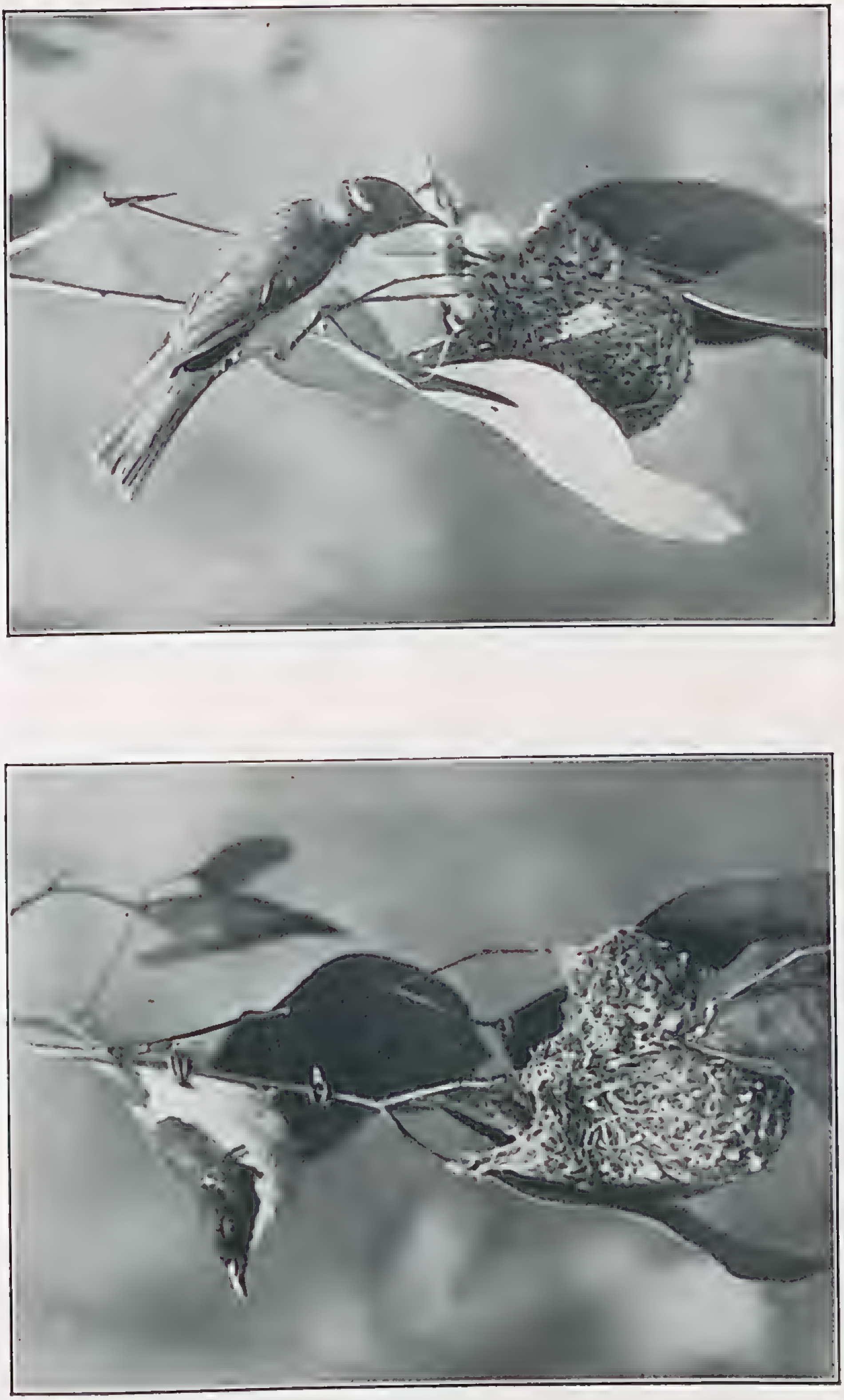
I hope he recovered his babies before they fell victims to some other foe from whom a second deliverance was not to be expected. Perhaps having found them, he was wise enough to lead them away from so unsafe a spot, for I have not seen parent or young since.

Nesting of the White-naped Honeyeater.

By (Rev.) Clarence L. Lang, R.A.O.U., Doncaster, Victoria.

"Black-cap," the dainty little White-naped Honeyeater (*Melithreptus lunatus*) is found at most of the creek-sides of southern Australia, where its pleasing note of "Joe-Joe-Joe," or the harsh note, "Churr-churr," may often be heard. Although fairly common, the species is not always easily observed, as it seems to like to feed in the upper foliage of the taller trees or in dense scrub. The sexes are alike in plumage—crown and sides of the head jet-black, a narrow white band on nape, wings and upper-parts yellowish-olive, and under-parts white. There is a bare space of beautiful orange-scarlet near the eye.

I had often observed these birds in the Doncaster district, about 12 miles east of Melbourne, but it was not until November, 1926, that I located a nest. In scrub bordering the Deep Creek at Doncaster East I found these birds in large numbers, and on 22nd November I located a nest about 40 ft. from the ground in a stringy-bark tree. The parent birds were busily engaged in feeding young. I visited this locality a fortnight later and the Black-caps' young proved to be a Pallid Cuckoo. The youngster kept up a continual



WHITE-NAPED HONEYEATER AT NEST, SHOWING FRONT AND BACK.

Photos. by (Rev.) C. L. Lang.

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cry for food, and the energy of the foster-parents was taxed to the utmost to supply the wants of the hungry parasite.

On 11th December, 1926, another nest was located in a very slender sapling, very cleverly concealed by the leaves, about nine feet from the ground. The location of this nest afforded better opportunities for observation. The nest was a wonderful piece of architecture, constructed principally of stringy bark, interwoven with fine grass, held together and attached to the stems of the gum leaves with spider webs. Three delicately-coloured pink eggs, sparsely covered with reddish spots, which were in the nest, looked quite fresh, but the female had no hesitation in coming to the nest while I was standing close by. I visited the nest again on Christmas morning, and found two young birds, recently hatched, and one egg, which was infertile. The parent birds were very tame; they visited the nest at frequent intervals, paying no heed to the camera two feet away. I again went to the nest on Tuesday, 28th December, but the young had disappeared—there was not the slightest trace of them. The nest was slightly disarranged, but there was nothing to indicate the fate of the nestlings.

While walking along the bank of the creek a fortnight earlier I had observed a Black-cap gathering food from a Christmas bush, which was in full bloom. Watching closely, I saw this bird fly to the top of a slender sapling some distance away. I carefully made my way to this spot and soon located the nest, which was about 25ft. from the ground. The nest contained young ones, which apparently had just been hatched. The day was cool and as the parent bird fed the young it would nestle down on them and remain until its mate appeared with food. Then it would leave the nest. This process was repeated, one of the parent birds always being on the nest to keep the nestlings warm. After watching this interesting procedure for some time, I very gently pulled the sapling over until I could view the interior of the nest. It contained two tiny, helpless young ones, and, fearing that harm might come to them, I quickly replaced the tree.

On 23rd December I again visited the nest. Ten days had made a wonderful difference in the size of the young ones, and as the adult birds showed confidence, I made preparations for taking photographs. I again pulled the sapling over, made it fast, and set up my camera about two feet from the nest. One of the birds, which I took to be the male, paid absolutely no need to the camera; he visited the nest with food at frequent intervals while I was standing beside the camera. But his mate was not so confident; she kept up a continual "Churr, churr," and could only be induced to come to the nest occasionally.

On 28th December the young, which were then 15 days old, left the nest. After a good deal of stretching on the part of the young and considerable coaxing from the parents, one of the fledglings ventured to a nearby twig. Presently the other nestling, finding itself alone, climbed out of the nest and up the slender suspended twigs, and firmly established itself on a branch above.

The young at this stage do not have the black cap of the adult bird, but they present a beautiful picture in their livery of yellowish-olive above and white beneath.

The Occurrence of *Acanthiza hamiltoni consobrina* in Victoria.

BY EDWIN ASHBY, F.L.S., R.A.O.U., Blackwood, South Australia.

ON the occasion of the R.A.O.U. camp-out at Murrayville, Victoria, 1924, and my one opportunity of collecting in what is locally known as "the Desert" some 11 miles S.W. of the township, Mr. J. A. Ross and myself saw several small companies of an *Acanthiza*, scattered through the mallee and heath country. Unfortunately, owing to limitations of time, I personally only secured one skin.

It was found impossible to reconcile the skin with the form of *hamiltoni* previously recorded from Victoria, and I therefore brought it to Melbourne for the purpose of further examination and comparison with the examples in the H. L. White collection. Messrs. A. J. and A. G. Campbell, together with myself, have come to the conclusion that it is the desert form that occurs at Leighs Creek and the Everard Range in South Australia, and which was described by Mathews under the name *Acanthiza pusilla consobrina*, from examples collected at the former locality.

As compared with the western examples from the Everard Range, the shade of the whole of the upper side, including the rump, is identical (rump "snuff-brown," Ridgway). This is the lightest and most pallid form of the species, but the Murrayville example is not as dark in the rump as are skins from Palm Valley, Central Australia, collected by Whitlock. On the other hand, the striations of the Murrayville specimen are blacker and broader than either. The fact that the crescents on the forehead are less in number and larger in size is an indication that it is a female—it was impossible to determine the sex when skinned.

This is the first time that this pallid form has been taken in Victoria, and it constitutes a remarkable extension of the range of *consobrina*. As it is only separable from the interior bird by the existence of darker and broader dashes on throat and breast, any attempt to distinguish it by giving it a distinctive name would in my opinion be a dis-service.

Camera Craft.

The White-cheeked Honeyeater (Meliornis nigra).—This noisy and brightly-plumaged bird is quite common on the North Shore line (Sydney). It is often heard and seen in gardens where coral trees are growing. Towards the end of August, 1925, I found a pair of these birds nesting in some thick undergrowth along the side of a small creek at Wahroonga, and spent many patient hours trying to photograph the adult birds at home, but without much success. About the same time next year (1926) I was shown several nests of this Honeyeater at Gordon, a few miles away, and it was there that the accompanying photograph was taken. The two young

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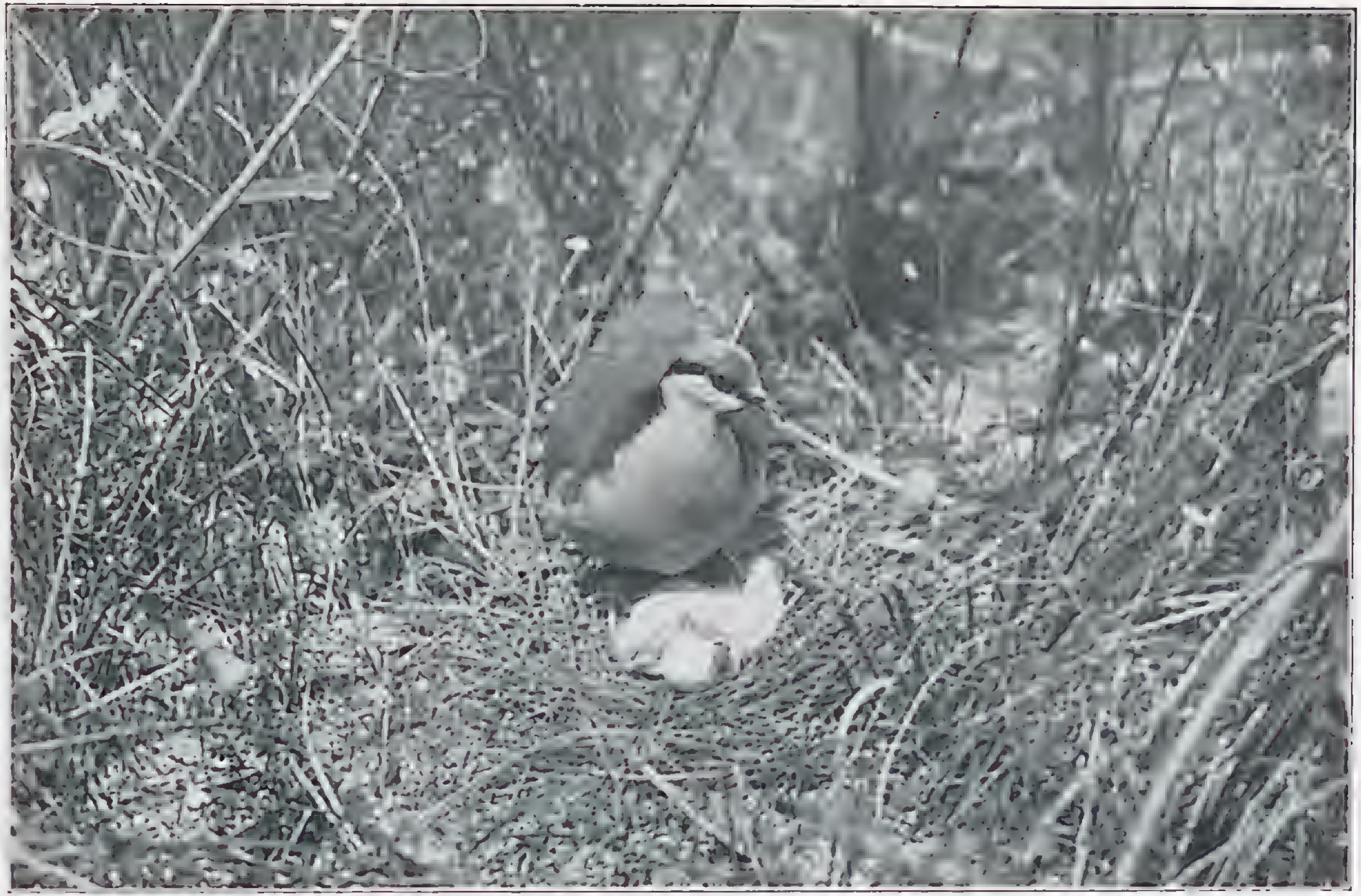

BRUSH BRONZEWING ON NEST. "ONE NEEDS TO HAVE A CLOSE VIEW OF THESE PIGEONS IN LIFE TO FULLY APPRECIATE THEIR BEAUTY."

Photo. by N. Chaffer.

birds were almost ready to leave the nest so I took them out and placed them on a twig and focussed my camera on to it. As soon as I settled down about 15 yards away, with the release, the parent birds descended, and I had no difficulty in photographing them. When finished I placed the young birds back in their nest and they left of their own accord about two days later.—H. C. BARRY,* Wahroonga, Sydney (7/3/27).

* * *

Photographing the Brush Bronzewing.—On 17th October, 1926, while on a ramble on some of the uplands near Middle Harbour, I had the good fortune to flush a Brush Bronzewing Pigeon (*Phaps elegans*) from its nest. I considered it somewhat of a find, for this bird is getting scarce in these parts. Bush fires, which are of frequent occurrence in the hot weather, are, I believe, the chief cause of their decreasing numbers. Pairs are occasionally met with in the open heathy country, where the seeds of the numerous flowering shrubs form an abundant food supply.

The nest was placed on the ground in a somewhat swampy area of grasses and small dwarfed banksias and other shrubs. Surrounding this comparatively cleared area was a growth of larger banksias, dwarf eucalypts and other trees. The nest was the usual frail structure of sticks, built by all the Pigeons, and contained two eggs which from their faint pinkish tinge were seen to be fresh.

I erected the camera in front of the nest, and, having camouflaged it with bushes, ran out the releasing thread to its fullest length, about forty feet. Returning in about an hour's time, I could make out from a distance the Pigeon sitting on the nest, and at once secured a photo. I approached very quietly, but the bird flew up with startling suddenness when I was about ten feet away and dropped among the bushes after a short swift flight. A little later I noticed it peering at me from beneath the dark shadow of some banksias growing on a miniature rocky plateau about thirty feet away. If I made any movement the bird would hurriedly run off among the bushes, to reappear quickly when all was still.

I again visited the nest on 31st October, and, quietly approaching, had a good view of the Pigeon sitting on the nest. It was in splendid plumage, the rich deep chestnut of the upper surface forming a pleasing contrast to the soft grey of the breast. The bronze of the wings was conspicuous as it glinted in the sun's rays. One needs to have a close view of these birds in life, and in their natural surroundings, to fully appreciate their beauty. The nest still contained two eggs. I made another attempt to photograph the bird, but gave it up after an hour's wait.

A further visit was made on 7th November. This time the nest contained a young bird a few days old and an addled egg. I was again successful in securing a photo of the bird at the nest. The bird was very timid, though at the first approach to the nest she would sit very close and not leave until I was almost upon her. On subsequent visits during the same day she would fly off before I could get near.—NORMAN CHAFFER, Roseville, N.S.W.

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*The writer of this note is only 17 years old.—EDITOR.

Stray Feathers.

Nesting of the Chestnut-eared Finch.—I found a rather unusual nesting site for a Chestnut-eared Finch (*Taeniopygia castanotis*). It was in a hollow fencing post; the nest was situated about 10 inches down the hollow, and had three fresh eggs in it. This is very late for this bird to be laying (10th March).

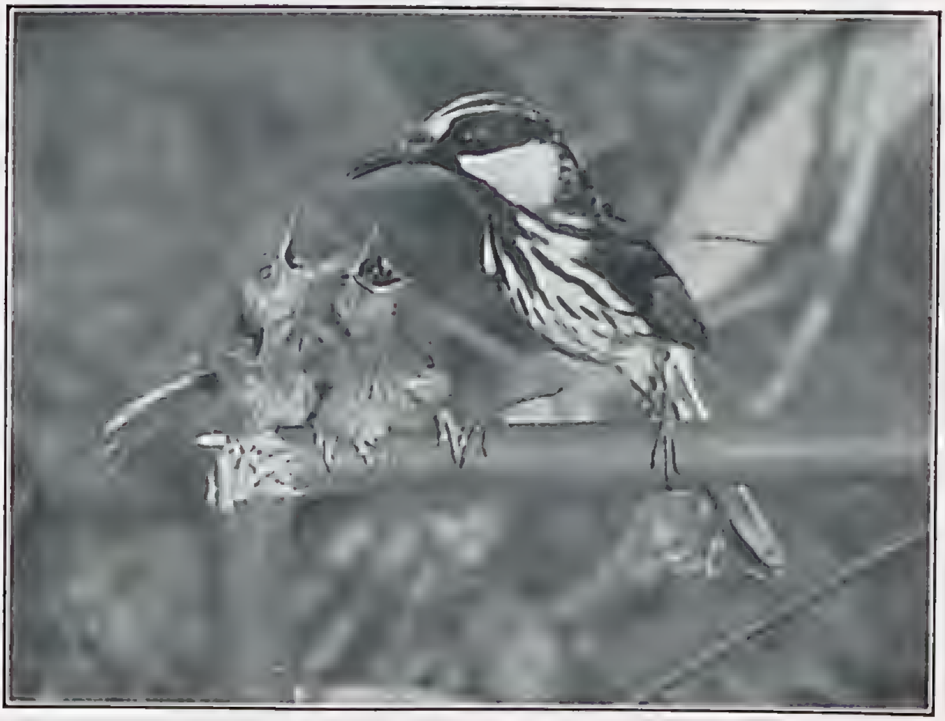
Stubble-Quail are breeding in this district. I have seen both eggs and chicks, but considering the abundance of feed it is rather surprising the small number of birds one sees.—N. GEARY, Mount Pleasant, Dalby, Queensland (10/3/27).

* * *

A Spotted Owl's Rapacity.—In July of 1926 our attention was claimed by a great commotion among birds in a large box tree, situated in a clump of timber near our house. Upon investigation it was seen that a large and ferocious-looking bird was the cause of the excitement. At the foot of the tree sat an old Frogmouth (*Podargus strigoides*) in a very bedraggled condition. Having examined him I saw that he was seriously injured, so much so that he could breathe only with difficulty. The other bird was shot; it proved to be a Spotted Owl (*Ninox novae-seelandiae*). In his beak and talons were grasped feathers from the body of the unfortunate Frogmouth. He had evidently assaulted this harmless old bird, which I think was one of a pair that used a tree nearby to sit in throughout the day. I took the Frogmouth home and endeavoured to fix him up a bit, but he died the same day. One would expect the Spotted Owl to confine his operations to lizards, mice, etc.—ERIC H. LOHSE, Tarban, *via* Wallangarra, N.S.W. (4/3/27).

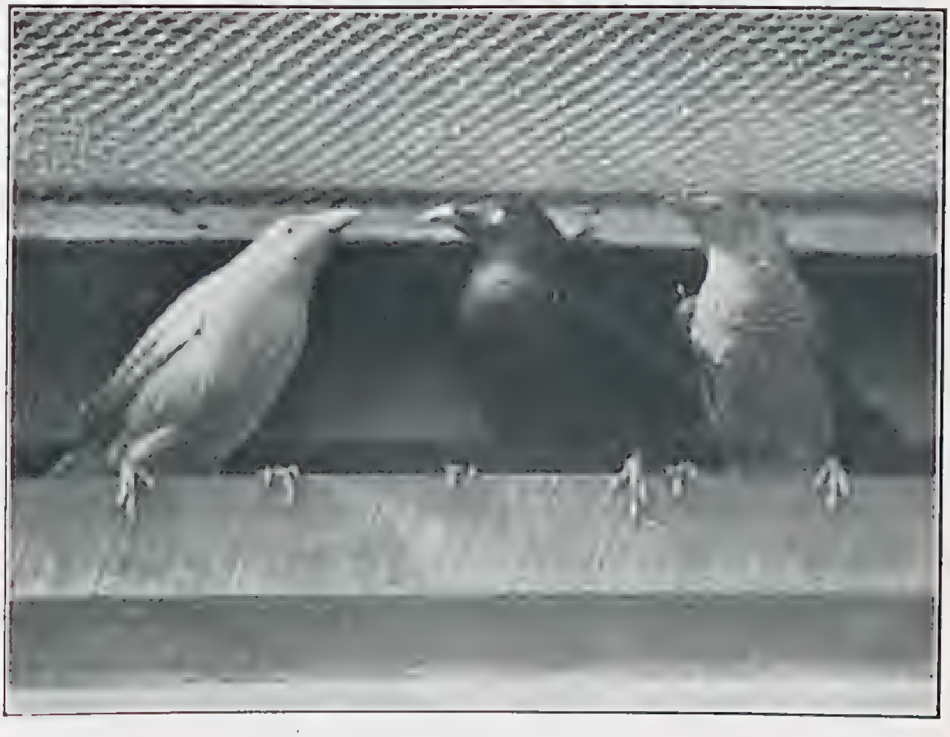
* * *

A Bush Humorist.—The note regarding the White-throated Nightjar (*Eurostopodus mystacalis*) on p. 190 of the current *Emu* (Vol. XXVI., p. 190) interested me, for the following reason. Some years ago, when in east Gippsland, I stayed part of the time with people whose clearing was situated on the verge of a tract of forest country, and at night a series of light, laughing notes would sometimes be heard from the trees of this tract. No one about there seemed to know from what animal the sound proceeded, and on moonlight nights I used to go down into the bush to try to solve the problem. But the laugher had either the ventriloquial power highly developed, or was able to slip very rapidly and noiselessly from place to place, for no sooner was I under the tree from which the notes had proceeded, than they ceased there and were heard from another fifteen or twenty yards away, and when I arrived there the sound would come from the head of a third tree. Though never able to catch sight of the producer, I put it down, from the character



White-cheeked Honeyeater and Young. "A Noisy and Brightly-Plumaged Bird."

Photo. by H. C. Barry.



Left to Right: (1) Albino Male Satin Bower-Bird; (2) Normal Male; (3) Female. All in the Aviary of Mr. Maurice Baldwin, Brisbane. (See *ante*, p. 228).

Photo. by courtesy Brisbane *Daily Mail.*

[illegible]

of the notes, as either a Nightjar or an unlisted Owl, allied to the now-extinct Laughing Owl of New Zealand. In the books which I have consulted there is no reference to this remarkable "laugh," but the *Emu* editorial footnote to the effect that "the call of this fine Nightjar is singularly animated; it is sometimes called the Laughing Owl," at once removes the doubt. As to the note of another of the family, the Spotted Nightjar (*E. argus*), Mr. A. J. Campbell in his *Nest and Eggs* quotes G. A. Keartland that the call is "Caw-caw-caw, gobble-gobble-gobble," and Le Souef gives the call of the Large-tailed Nightjar (*Caprimulgus macrurus*) as "chop-chop." It is very remarkable that we have none of the family in Tasmania, where they would do so well.—H. STUART DOVE, West Devonport, Tasmania (28/2/27).

* * *

How Cuckoos Operate.—Anything noted at first-hand regarding the manner in which Cuckoos foist their eggs upon other birds is of some importance. That is why I have been greatly interested in letters on the subject sent to me by youthful readers of *The Boys' Weekly* (Sydney). The lads were not asked especially to deal with Cuckoos; they were merely invited (all over the Commonwealth) to forward good Nature stories from their own experience; and three out of some thousands who wrote offered notes upon Cuckoos. I accept these lads' statements as broadly authentic. Australian boys are keen observers, and, moreover, when put upon their honour (as in this case) they are not given to romancing.

The first lad, living at Canberra, wrote as follows: "It has been a great question as to how the Pallid Cuckoo gets her eggs into other birds' nests. Some say she lays them in the nest, but how could she get into a Tomtit's nest? Well, one day last spring, as I was walking through the bush, I saw a Cuckoo carrying an egg in its beak. I watched it, and saw it fly on to a hanging limb, in which I discovered a Tomtit's nest. The Cuckoo hopped on to the branch in front of the nest and put her head through the hole. Then she drew it out again, but without the egg. She sat there for a few moments looking around, and then put her head into the nest again, and, taking an egg out, she dropped it on the ground. She did this again, and then flew into a tree a little distance away, where she was accompanied by another Cuckoo. I then went to the nest, which was not very high, and found that the Tomtits were not at home, and that the Cuckoo had left one Tomtit's egg with its own; but the other two on the ground were broken. Perhaps the Cuckoo waited until the Tomtits left their nest."

A second letter, from a lad living at Doncaster East, Victoria, comments upon a Cuckoo (species not given) parasiting a Pipit (*Anthus*): "My brother and I were crossing some ploughed land when we startled a Ground-Lark and then discovered her nest, which was closely concealed and probably would not have been found had we not seen the bird. A few days later we were passing the same place when we saw two Ground-Larks chasing a Cuckoo. While thus engaged another Cuckoo made for the nest (how it knew it was there is a wonder) with an egg in its beak, and placed it in the nest. Having done this, it took one of the other eggs from the nest, carried it a short distance, and sucked it dry."

The third letter is even more striking. Its writer, a boy living at Burwood, N.S.W., claims to have seen a Cuckoo sit on a nest to lay an egg and to have watched also while the owners of the nest threw the egg out. This is the letter : " While I was walking in the bush I saw a Cuckoo fly into a tree where there was a very neat nest built. The owners were not at home, so the Cuckoo got into the nest and laid an egg. Then it flew away. The owners soon came home, and made much fuss over the big egg. Then the father-bird made a hole in the side of the nest, and they both pushed the big egg out and it was smashed on the ground. I waited to see what they would do next. They flew about the branches and gathered some twigs, and in half an hour the hole was mended."

It is this last letter that calls for cogitation. There seems to be no doubt that the larger Australian Cuckoos (the Channel-bill and the Koel) sit on nests to lay their eggs, but is there any other record of one of the smaller Cuckoos ever doing so ? Fosterers have been known to throw out Cuckoos' eggs, others have been known to cover them with fibres and feathers, and others have been known to destroy the nest. But is there a case of birds being seen to open their nest to eject a Cuckoo's egg and then patch the dwelling again. On several occasions I have found nests of White-throated Warblers (*Gerygone olivacea*) with a ragged hole in the rear ; and now I wonder if this was done by the owners in order to eject a Cuckoo's egg.—A. H. CHISHOLM, Sydney (3/3/27).

* * *

Kookaburra as Raider.—I have long been of opinion that the Kookaburra, behind a smug exterior, hides the character of a raider. At all events, in well-cleared districts such as ours, where " Jackasses " are not decreasing in numbers, it becomes increasingly difficult for them to obtain natural fare without being a menace to all the little birds about. From his outlook on a dead tree or upon a post, Jack watches his surroundings with keen eyes. There are no snakes now, and few lizards or mice, so he takes small chickens that venture out of the coop ; and he can capture the wily sparrow, belaboring the victim into a pulp before swallowing the catch. In its depredations among the Australian birds, the " Jackass " reveals an ugly trait. One would think the Magpie-Lark could look after its home and offspring, but on one occasion at Mt. Dandenong I witnessed a Kookaburra carry off a small nestling from the mud nest, while the two brave parents were driving away another " Jackass," its companion. Residents told me the siege had gone on for a couple of days, and I have no doubt ended only when the young Magpie-Larks were eaten.

There is much circumstantial evidence that the " Jackass " destroys many native birds while in the nestling stage. In an open, park-like paddock near where I live, I made the following observations three years ago : Visiting a nest of the Speckled Warbler, one of the nestlings partly feathered moved out of the nest a foot or two away; a "Jackass" swooped down out of nowhere and would have taken it had I not thrown my hat at him. Within a few chains' compass were the nests of a Yellow Robin, with newly hatched young, a Scarlet Robin sitting, and a Blue Wren with eggs. Next day the Speckled Warblers were gone, and the nest had every appearance of being forcibly opened. Within a week the contents of all the other nests disappeared in the same way. The Wren's nest in particular, was half pulled from its site.

One morning I watched a Tree-runner at its nest. It had just fed the young and was hanging head down peering at its offspring, when it suddenly, with a movement too quick to follow, dropped on its nest and sat tight. The reason was soon apparent when a "Jackass" flew into the tree. When the danger was past the little mother resumed her search for food. During the same season I saw another "Jackass" flying with a Silvereye's nest in its bill, the contents of which I have no doubt were young birds.

Last year in my garden was a Thornbill's nest which provided some interesting notes and photos on the rearing of a Cuckoo; but one day, when the Cuckoo was about a week old, and Jack could see from his wayside perch the little birds busily feeding the nestling, the whole thing disappeared. A search in the open ground revealed the identical nest torn open and rifled lying beneath a tree. This year, within two chains of the same spot, another Thornbill's nest was rifled in the same way.

In October last a Shrike-Thrush built a nest in an unusual place, the spouting at the corner of a building. A "Jackass" was often seen on his observation-post within sight of this nest, and I have heard the sitting Thrush scolding him. But when almost ready to hatch, one egg disappeared, then another, and the bird deserted; then the last egg went. Only the Kookaburra remained.

If this sort of thing continues it is serious for the little birds, which I contend are far more valuable in gardens and orchards than many "Jackasses." Black-and-White Fantails and Brown Flycatchers, instead of being common, are getting scarce in our district. Two pairs of Restless Flycatchers, which nested by the roadside several years in succession, have now disappeared, as also has the Hooded Robin. I venture to say the reason is they all nest in exposed positions and their young are snatched from them by this raider.—A. G. CAMPBELL, Kilsyth, Victoria (3/1/27).

* * *

Sericornis osculans in Victoria.—In the Checklist, under No. 488c, *Sericornis osculans*, Gould, is treated as a sub-species of *S. frontalis*, and the type locality given as Port Adelaide, where it does not occur; it was described from the Mt. Lofty Ranges. Mr. A. G. Campbell has expressed the opinion that *osculans* should be considered a good species, and I consider there is a good deal to support his contention. *S. osculans* from the type locality, Mt. Lofty Ranges, has a white throat with centres of feathers streaked with black, whereas *S. frontalis* has the ground colour of the throat cream, with centres of feathers more or less dark but not black; *S. frontalis* has the sub-terminal tail-band very obscure and only on the inner webs, whereas the sub-terminal band in the tail feathers of *S. osculans* is black and very marked and extends to the outer webs.

As before stated, the examples from the Grampian Range correspond with specimens from Mt. Lofty Range, in South Australia, in all but the sub-terminal band in the tail feathers, which does not in these extend to the outer webs. In the event of the ultimate acceptance of *S. osculans* as a full species, I would suggest the adoption of *grampianensis* as a sub-specific name of the form of *S. osculans* occurring in the Grampians, the distinguishing character being the non-extension of the sub-terminal band to the outer webbing of the tail feathers. But for the present, in conformity with the R.A.O.U. Checklist, the birds from the Grampians must be known as *Sericornis frontalis osculans* Gould.—EDWIN ASHBY, Blackwood, South Australia (5/1/27).

From Magazines.

Egg-collecting.—According to the *Ibis* for January, the result of the special meeting of the B.O.U. called for 8th December last to deal with the case of Mr. Edgar Chance and the Crossbill matter (mentioned in the January *Emu*) was that a motion was proposed condemning the action of the Committee in requesting Mr. Chance to resign his membership; this motion, after some discussion, was rejected by a large majority, only 12 members out of 103 present voting for the motion.

* * *

White Birds.—In a recent article entitled "Snowbirds" in the *Illustrated London News*, Mr. W. P. Pycraft, F.Z.S., refers to the change of plumage of the Ptarmigan of the highlands of Scotland from the brown in summer to snow-white in winter, and of the Willow-Grouse of northern Europe, which becomes pure white in winter. These changes, he says, we are justified in assuming are "in direct response to the need of a protectively-coloured dress, a mantle of invisibility to enable the wearer to escape its enemies." In support of this Mr. Pycraft points out that most northern animals turn white in winter, and some, like the Polar Bear and the Snowy Owl, are white all the year round, though the Owl has inappreciable dark markings. He goes on to say that there are cases of white liveries that cannot be "attributed to the need of harmonization with a snow-covered landscape," and instances the White Goshawk, of Australia, a White Mexican Hawk and an Egyptian Vulture. He also points out that all the Swans of the world, even the strange, goose-like Coscoroba Swan of South America, are white, except the Australian Swan and the Black-necked Swan of southern South America. He concludes: "So, then, while we can be quite justified in regarding a white dress as a specially developed and protective dress in all cases where it is associated with a long winter season with an unvarying mantle of snow, there are other factors inducing whiteness which have clearly nothing to do with snow, and are still to be sought for."

This is, no doubt, a most interesting question. As to the White Goshawk of Australia, Cuvier long ago suggested that it was an albino variety that had become permanent. There is a record by Mr. H. G. Barnard from north Queensland of a pure white male bird mating with a grey female bird. The new Australian Checklist does not list a separate white species; it gives *Astur* (*Leucospiza*) *novaehollandiae*, Grey (White) Goshawk. Then there is the White Cockatoo of Australia (*Kakatoe galerita*), a unique species. How is its whiteness to be accounted for?

* * *

Birds Crossing the Atlantic.—In drawing attention to cases of Kittiwake Gulls crossing the Atlantic fron England to Canada, the Editor of *British Birds* desires to make it known that his readers have placed rings on the legs of over 170,000 wild birds during the last seventeen years. Each ring is stamped "Witherby, High Holborn, London," and bears a distinctive number. Any person finding a bird bearing such a ring is asked to communicate at once details of the number and the date and place of the finding or capture of the bird to the address named, in order that its migration and other history may be recorded.

Correspondence.

SOUTH AUSTRALIAN RECORDS.

(To the Editor.)

Sir,—In *The Emu*, Vol. XXVI., pp. 207-211, an article appears on a "Trip to the Coorong," by Mr. M. A. R. Arnold, R.A.O.U., in which there are several matters that call for comment. One new record is made for South Australia and four new records for the Coorong.

The White-fronted Tern (*Sterna striata*) has not previously been seen in South Australia. Its habitat is given in the Checklist as "E.A., T., N.Z. coasts." As no specimen was secured and the bird is not readily recognised on the wing, our Association is not prepared to accept this record.

The four records for the Coorong are—

1. Grey Plover (*Squatarola squatarola*).—"Seen once on samphire flat." As the migratory waders are, almost without exception, in the non-breeding plumage it is well-nigh impossible to identify a bird such as this. The three specimens already recorded for South Australia are: one from Kangaroo Island, and two from Stansbury, Yorke Peninsula, all taken on the seashore.

2 Bar-tailed Godwit (*Limosa lapponica*).—"Small parties seen occasionally on beaches." How is it possible to distinguish this

bird from the Black-tailed Godwit (*Limosa limosa*) without securing a specimen? There are only three South Australian records of the genus. One of these, *Limosa limosa*, was taken in 1909 at Narrung, not far from the Coorong. A *Limosa lapponica* was obtained at St. Kilda, S.A., in Octr., 1904, and Gould observed the species in Spencer's Gulf in 1839.

3. Plumed Whistling Duck (*Dendrocygna eytoni*), now called the "Plumed Tree-Duck."—"A small party flew overhead on the morning of October 22." As this species has only been recorded from the interior of South Australia an observation of birds in flight is not sufficient evidence for a record.

4. Ground-Parrot (*Pezoporus wallicus*).—This bird was identified and recorded from two glimpses of a few seconds in flight. If this species ever occurred in this district it has been extinct for at least 40 years!

Black Cormorant (*Phalacrocorax carbo*) is stated to be "common everywhere." This is certainly a case of mistaken identity. The "common" Black Cormorant on the Coorong is the Little Black (*P. ater*). *P. carbo* must be very rare, as none of our members has recorded it from there.

We protest against these slipshod methods of making records; nor is our Association prepared to accept them unless a specimen has been taken.

We notice also that the noise made by the Swans on rising is attributed to the beating of the wings on the water. This is not so. The noise is made by the feet. One of us was recently shown a fine series of photographs of rising Swans by Mr. Edgar F. Stead, of Christchurch, N.Z., which clearly showed that the wings did not come near the water when the birds obtained the momentum for flight.

Yours, etc.,
A. M. MORGAN,
J. SUTTON,
Hon. Sec.,
South Australian
Ornithological Association.

Adelaide,
7 March, 1927.

P.S.—We think a word of warning should be given to Mr. Dove's suggestion (page 228) that Viper's Bugloss should be planted. That is a near relative of *Echium plantagineum* (*violaceum*), a noxious weed in South Australia, which covers many square miles of land. The estimation in which it is held may be judged by one of its vernacular names—Paterson's Curse. Mr. Dove's statement with regard to *Echium vulgare* fits our species—"it requires no care or cultivation, going strongly ahead on its own initiative."—A.M.M.: J.S.

DROMAIUS OR *DROMICEIUS?*

(To the Editor.)

Sir,—These two names come from Vieillot's *Analyse d'une Nouvelle Ornithologie*, 1816; the former from page 70, the latter from page 54. The R.A.O.U. Checklist Committee accepted *Dromaius* rather than *Dromiceius*, rejecting *Dromiceius* as a manifest error and not the name intended by Vieillot. Mr. Gregory Mathews and (it seems) two or three Sydney ornithologists also, think otherwise and accept *Dromiceius* as Vieillot's approved name. *Dromaius* and *Dromiceius* are latinized forms of the two Greek adjectives *dromaios* and *dromicos*, respectively—cognate words, meaning swift. *Dromaius* occurs in Vieillot's alphabetical summary of his new names thus :—

NOUVEAUX NOMS, TIRÉS DU GREC, QUI SONT EMPLOYÉS DANS CETTE ORNITHOLOGIE.

Dicrurus . . .
Dilophus . . .
Dromaius [*dromaios* in Gk. letters, *velox*].
Dulus . . .
Eudyptes . . . &c.

Dromiceius is *not* in this list. It occurs (earlier in the book), thus :—
199, EMOU, *Dromiceius*.

Agassiz, *Nomenclator Zoologicus*, 1842, refers to the names as follows :—**Dromiceius**, Vieill, *Analyse*; *dromicos* (Greek letters), *currax* and in *Addenda et Corrigenda* (same volume) **Dromiceius** *typographi errore pro* **Dromaius.**

Newton, *Dictionary of Birds*, 1896, on p. 213. footnote says :—" The obvious misprint of *Dromiceius* (Vieillot *Analyse*) has been foolishly followed by many naturalists, who forget that he corrected it a few pages further on to *Dromaius*."

Those are some of the facts bearing on the question. To make *Dromiceius* acceptable it should have been included in Vieillot's list of NOVEAUX NOMS as quoted above, along with his other " new names," and *Dromaius*, which *is* included as a new name, should somehow disappear from the list; in other words, **Dromiceius**, [*dromicos* Greek letters, *velox*] should be there instead of **Dromaius** [*dromaios, velox*].

Yours, etc.,
H. WOLSTENHOLME.

Wahroonga,
Sydney,
7 February, 1927.

NEW ZEALAND RECORDS.

(To the Editor.)

Sir,—With reference to my paper, " Stragglers and Migratory Birds of N.Z.," appearing in the January number of *The Emu*, I wish to comment on the two footnotes.

You state that Falla's record of *Aptenodytes patagonica* must be regarded as doubtful unless the remains have been preserved. Mr. Falla has in his possession the skull and a fragment of the skin.

Regarding the footnote to *Limosa lappinica* (doubtless this was intended for *Limosa limosa*) you refer to *Vetola haemastica*, Hudsonian Godwit. In the Official Checklist, 1926, *Limosa limosa* is listed, together with the record of " N.Z. (once)." Mathews and Iredale (*Ibis*, 1913, p. 258) considered the Hudsonian Godwit a sub-species, naming it *Limosa limosa haemastica*. I therefore concluded that the New Zealand records were referable to *Limosa limosa*, and in doing so followed the Official Checklist.

Incidentally, the following printer's errors in my paper need correction :—

Eudyptes schegeli : Second record, correct reference, B.B., II., 297 ; not 197. The reference to *E. chrysolephus* (? syn.) refers to the last two records, which were described under this name.

Fregetta lineata : The reference for the two records is Godman's *Monograph of the Petrels*, p. 57.

Nycticorax caledonicus : " Might have been an introduced bird ; some were liberated about that time," refers to the first record, 1856.

Yours, etc.,
ROBT. H. D. STIDOLPH.

Masterton,
New Zealand.
March 10, 1927.

KOW PLAINS.

(To the Editor.)

Sir,—It is only a day or two since my copy of the new Checklist arrived. The more I look into it, the greater is my admiration for the work which has been put into its preparation and for the wealth of information it contains. Not the least useful feature is the map showing type localities. Every book summarising scientific collections should contain something of the kind. Every student, I suppose, has wasted many hours searching in crowded maps for names which while noted enough from the scientist's point of view are not important enough in physical or political geography to find a place.

It would be surprising if in dealing with many obscure and often duplicated place-names scattered over an area of three million square miles there were not a few errors which residents might note in the geography of their own localities. Surely Kow Plains is west of Underbool—right in the heart of the Mallee Country of north-west Victoria ! Only a low sand-rise prevents my seeing the old Kow Plains homestead as I look up from my letter. Kow Swamp is south-east of Ultima. If there are two localities bearing the former name, no doubt some other reader will be able to put us right.

Yours, etc.,
WALTER WALTERS.

" Hazeldean," Cowangie,
7 March, 1927.

Reviews.

SOME MEXICAN BIRDS.

"Notes on Birds of Sinaloa and Nayarit, Mexico, in the Fall of 1925." By M. E. McLellan, Assistant Curator, Department of Ornithology and mammology, California Academy of Sciences. Published by the Academy, San Francisco U.S.A.

These notes are the record of some valuable field work carried on from three centres in the "tierra caliente" of the north-west coast of Mexico, and will be of great assistance to students of the avifauna of this country and of the Neotropical avifaunal region which includes Mexico and the West Indies, along with the continent of South America. They list 151 species, with informative remarks about each. The part of Mexico visited contains an arid as well as a humid tract and is situated just within the northern tropic, corresponding in southern latitude with the region extending roughly from Bowen to Rockhampton in Queensland. Though birds such as Woodpeckers, Vultures, and Humming-Birds, unknown in Australia, are noted, there are included also representatives of bird families well-known (in their own Australian genera) in central Queensland and other parts of Australia, such as the *Columbridae*. *Psittacidae* (a few) *Alcedinidae*, Flycatchers (the *Tyrannidae* of America, *Muscicapidae* of Australia). There are included also many birds of families of cosmopolitan range, notably water-birds, including therein genera found in Australia *e.g. Numenius*, *Heteroscelus*, *Plegodis*, *Pelecanus*. Pelicans (*Pelecanus occidentalis californicus*). Known to the Mexicans as "Professor Birds," the Pelicans, it appears, "were always in evidence along the coast; they sailed about with most dignified mien among the the rollers near shore and fished in the *esteros*."

"Man-of-War Birds (*Fregata* sp.) soared overhead looking like great hieroglyphics outlined against the sky." Among the Flycatchers is mentioned a species, *Myiochanes richardsonii*, known as a Wood-Peewee. An Australian would be inclined to think that his familiar Peewee (*Grallina cyanoleuca*) so well known all over the continent, was the only Peewee. The name is, no doubt, onomatopoeic in origin.

Members of the R.A.O.U. and bird-lovers generally should welcome a booklet by Mr. J. L. Menzies, R.A.O.U., of Melbourne, entitled *By Gordon's Grave and Other Verses*. Mr. Menzies is evidently one of those who believe that Australian birds will not attain their rightful place in the affection of the nation until they sing their way into the hearts of the people through the happy medium of verse. Thinking thus, he has done well to offer metrical praise of the Grey Thrush, the Summer-Birds (Wood-Swallows), the Magpie, and the "Greeny" (evidently the White-plumed Honeyeater). The case for our winged wanderers is strengthened, too, by an instructive prose plea for the "preservation of Australian birds." a reprint from an article published by Mr. Menzies, under the auspices of the R.A.O.U., in the official Gazette of the Education Department of Victoria.

The *Zoological Record*, XV, Aves. compiled by W. L. Sclater, M.A., for the Zoological Society of London (price 7/6), is now available. The object of the *Record* is to give, by means of an annual volume, complete lists of the works and publications relating to zoology in all its branches that have appeared during the year preceding the issue of the volume, together with a subject and systematic index. The ornithological section is in good hands ; Mr. Sclater is to be thanked for doing a tedious task very thoroughly.

Important Notice.

The R.A.O.U. threatens to become seriously embarrassed by the fact that many members have not paid their annual subscriptions for the current year, which were due nine months ago. It is recognised that this is almost entirely due to thoughtlessness, but such thoughtlessness ought not to be allowed to creep into the affairs of a body whose affairs (including the publishing of a distinctive journal) are controlled by entirely honorary officers. The Union has been put to very heavy expense for printing of late, and it cannot continue to function satisfactorily unless members pay more attention to their financial obligations. It is desired that this matter be treated as urgent.

Notes and Comments.

The present issue of *The Emu* contains contributions from every Australian State and also two distinctive articles from New Zealand and one from the Falkland Islands. Several other notable articles have had to be held over till next issue.

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Unless otherwise stated, all paintings upon which coloured plates in *The Emu* are based are donated by the artist, Mr. Neville Cayley. Anyone desiring to purchase an original should communicate with Mr. Cayley at Collins Avenue, Rose Bay, N.S.W.

* * *

The Editor acknowledges with appreciation the fact that most manuscripts now submitted for publication in *The Emu* are typewritten. When this is not possible, all technical names should be written with especial clearness. Contributors should also note that the scientific nomenclature adopted in the Checklist must be followed in the journal of the R.A.O.U.

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The Hon. General Secretary of the R.A.O.U. reports that there has been a good demand from members for copies of the new Checklist. It is highly advisable that every member should become possessed of a copy of this publication. Send 12s. 8d. (postage 2d.) to 376 Flinders St., Melbourne, and a copy will be forwarded. A limited number of special interleaved copies are available at 18s. 6d. a copy.

* * *

Judge Charles Frederick Belcher, of the High Court of Nyasaland, has been appointed Chief Justice of Cyprus. Judge Belcher was born in Geelong, Victoria, in 1876, and is the son of the late G. F. Belcher, who was formerly a member of the Victorian Legislative Council. Judge Belcher was admitted to the Victorian Bar in 1902 and at Gray's Inn in 1909. In 1914 he received an appointment as magistrate in Uganda, Africa, and as assistant judge at Zanzibar in 1920. From 1920 to 1924 he was a member of the Court of Appeal for Eastern Africa. Judge Belcher is an original member of the R.A.O.U. He wrote a book entitled " Birds of Geelong," and was for two years (1905-06) co-editor, with Mr. A. J. Campbell, of *The Emu*.

* * *

In accordance with a resolution adopted at last Congress, the R.A.O.U. wrote to the authorities in every State of the Commonwealth, asking that efforts be made to breed up rare Parrots in approved aviaries, with a view to re-establishing them in suitable sanctuaries. The replies express sympathy and ask for assistance in the matter. The Council of the R.A.O.U. now invites State branches and members generally to forward practical suggestions and generally to do all they can to help in this national effort.

* * *

Another resolution adopted at the last Congress of the R.A.O.U. expressed alarm at the great numbers of Emus killed under the auspices of the Prickly Pear Land Commission, Queensland, and asked that the destruction be stayed pending a thorough investigation, on a scientific basis, of the food of birds in the pear areas. The Commission has replied asking for " clear supporting evidence " in favour of Emus, and stating that the matter must be approached solely from the economic standpoint. It adds that destruction of the birds will not continue indefinitely, but only for " so long as is necessary to reduce their numbers considerably," and expresses willingness to meet Queensland members of the Union on the matter. The R.A.O.U. has replied that "clear supporting evidence" was previously given, it having been shown that one Emu's stomach was found to contain 2,991 injurious caterpillars. The matter is referred to Queensland members, with a suggestion that the request for a proper examination of the food of Emus should be emphasised.

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Correction.—A printer's error in the January *Emu* caused the blocks on Plate 31 to be misplaced. The upper figure is a male Rose Robin and the lower figure a female.

Expedition to Queensland Islands.

An excursion of interest to ornithologists is being organized by Mr. E. F. Pollock, R.A.O.U., late Hon. Sec. of the Royal Zoological Society of New South Wales, to some of the islands of the Great Barrier Reef, off the Queensland coast. The expedition will leave Sydney by rail in November next, and join a suitable motor vessel at a port adjacent the islands to be visited. The date has been fixed to coincide with the breeding-time of the sea-birds and turtles which inhabit these coral atolls. It is intended to establish camps, each of about a week's duration, on four different islands in turn, and from these bases to visit other islands in the vicinity, making one day trips. If the weather is favorable—as it generally is at that time of the year—it is expected to explore about a dozen of these islands altogether, on all of which colonies of different kinds of sea-birds congregate and breed.

It will be remembered that Mr. Pollock led an expedition to North West Islet, Capricorn group, in Nov.-Dec., 1925, and he recently returned from Lord Howe Island after conducting a party of naturalists and others to that interesting spot. On each of these occasions several members of the R.A.O.U. were included in the parties, and Mr. Pollock again extends a cordial invitation to any members of the Union who would like to join the forthcoming expedition to get into touch with him early, as plans have to be formulated many months in advance. Several members of the R.A.O.U. have already signified their intention of making the trip.

Further particulars can be obtained by writing to Mr. Pollock, whose address is "Te Whare," Carrington Avenue, Strathfield, N.S.W.

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